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ON THE PROTECTIVE ACTION OF CALCIUM GLUCONATE, LIVER EXTRACT, VITAMIN C AND PANCREATIC EXTRACT ON LIVER DAMAGED BY TOXIC DRUGS

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A number of important drugs used in medicine like arsenic, antimony, atebrin, plasmoquin, atophan, carbon tetrachloride and chloroform have a common disadvantage of producing damage to the liver and their use is thus restricted to a great extent. They generally inflict on the liver a minor damage not detectable clinically, but occasionally they may produce damage so gross that it is followed by serious and often fatal results. As far as the nature of the pathological lesion is concerned, it is universally admitted that there is a central necrosis with fatty degeneration and infiltration of the liver tissues.

Chloroform and carbon tetrachloride being very commonly used drugs are generally selected as typical toxic substances for the study of liver damage. Various substances have been tried to protect the liver against the effect of these drugs. Food substances like fats, proteins and carbohydrates were studied by Opie (1913) and Whipple (1919) in relation to their protective action on the liver. Many other substances like calcium chloride (Minot 1927, Minot and Cutler 1928, and Wokes 1933), glucose (Chopra 1926-27), liver extract, xanthine, sodium xanthine (Sato 1926, Forbes 1936 and 1940), tricalcium phosphate, and calcium ricinoleate (Wars and Ravidine 1939) have been claimed to afford minor protection. Pancreatic insufficiency has also been held responsible for liver damage and Prohaska (1936) could prevent the development of fatty changes in the liver of depancreatised dogs by feeding them on raw pancreas. The changes produced in the liver after the removal of pancreas are the same as produced after the administration of toxic drugs.

In the present work four drugs were selected for finding out their protective action on the liver against toxic substances—calcium gluconate, liver extract vitamin C and pancreatic extract (fresh).

In the past, work in this line has mostly been carried out on animals. The results were based on the microscopic appearance of the liver sections prepared after killing the animals. In the present work I have carried out some observations based on changes produced in the liver efficiency (Brom-sulphathalein test on hospital patients. Large number of tests are advocated to test the efficiency of different functions of the liver; the hippuric acid test for detoxicating capacity and the dye tests for the global capacity are the most delicate and reliable. The Brom-sulphthalein test, compared with the other tests of liver efficiency, affords a much more sensitive index of liver injury, the positive results being obtained even when only twelve per cent of the liver is rendered functionless (Rosenthal, 1925).

Experimental

Experiments were performed on healthy well-fed rabbits. At first in a group of twelve rabbits, their normal efficiency was tested. Then they were divided into two groups of six each. To one group carbon tetrachloride (one single injection) was given, and to the other group chloroform (by inhalation for half an hour) was administered. The liver efficiency tests were performed immediately after and 48 hours later. The animals were then killed and sections from their livers were made. Then a group of ten rabbits was taken to study the effect of each drug. Five animals of each group were kept as control, and to the other five a protective drug was administered for a period of one week. All the animals were then given bi-weekly injections of carbon tetrachloride for three weeks; the animals of the protective group also got their respective protective drugs in between the injections. At the end of the experiment the changes in the liver efficiency were compared in the animals of the two groups. These were then killed and liver sections were made. Liver efficiency tests were performed by injecting 2 mg. Brom-sulphthalein per kg. of body weight, into the ear vein of a fasting rabbit. Exactly 5 and 20 minutes after the injection, 2 c.c. of blood was drawn each time directly from the heart of the animal. Blood was allowed to coagulate and centrifused and serum separated. A drop of 10 per cent solution of sodium hydroxide added to the serum brought out the colour which was compared with the colour standards of the comparator box. A normal rabbit's serum contained 12 to 14 per cent of the dye in five minutes and no traces of the dye in 20 minutes after the injection.

From the above four experiments done on 38 animals (two animals having died during the experiment) employing four different drugs it was found that calcium gluconate showed a definite protective action on the liver. Only very slight changes from the normal did take place in the livers of the animals of this group, while the control animals developed an extreme degree of fatty degeneration and infiltration (Figs. 1, 2).

TABLE I—COMPARING EFFECTS OF CARBON TETRACHLORIDE ON THE LIVER EFFICIENCY (L.E.) OF UNPROTECTED ANIMALS, AND ON THE ANIMALS PROTECTED BY DIFFERENT DRUGS. F.D.=Fatty Degeneration, F.I.=Fatty Infiltration, C.S.=Cloudy Swelling.

Groups		*Serial No. of animals*	*Weight in Gms.*	*L. E. % (5 & 20 minutes)*	*Protective drug administered*	*Carbon tetrachloride injected in c.c.*	*L. E. % after 4 wks. (5 & 20 minutes)*	*Microscopic findings*
	Control.	13	1250	15/0	—	0·12	60/30	F.D., F.I.
		14	1075	14/0	—	0·1	50/25	F.D., F.I.
		15	1550	16/0	—	0·15	45/20	F.D., F.I.
		16	1100	13/0	—	0·11	55/20	F.D., F.I.
		17	1800	16/0	—	0·18	40/25	F.D., F.I.
I. Calcium glucopate, 1 c.c. of a 10% solution per Kg. body weight.	Protected.	18	1200	13/0	1·2 c.c.	0·12	25/4	C.S.
		19	2000	18/0	2·0 c.c.	0·2	20/3	C.S.
		20	1180	13/0	1·1 c.c.	0·11	28/2	C.S.
		21	1270	15/0	1·2 c.c.	0·12	29/4	C.S.
		22	1860	14/0	1·8 c.c.	0·18	24/2	C.S.
	Control.	23	1510	14/0	—	0·15	70/30	F.D., F.I.
		24	1020	16/0	—	0·1	48/26	F.D., F.I.
		25	2010	18/0	—	0·2	55/33	F.D., F.I.
		26	1850	18/0	—	0·18	46/28	F.D., F.I., C.N.
		27	1340	14/0	—	0·13	42/30	F.D., F.I.
II. Liver extract 0·5 c.c. concentrated (P. D. & Co.) per Kg. body weight.	Protected.	28	1760	15/0	0·8 c.c.	0·17	24/4	C.S.
		29	1240	17/0	0·6 c.c.	0·12	27/5	C.S.
		30	1280	13/0	0·6 c.c.	0·12	Died.	—
		31	1610	15/0	0·8 c.c.	0·16	28/2	C.S.
		32	1740	13/0	0·8 c.c.	0·17	26/3	C.S.
	Control.	33	1140	16/0	—	0·11	60/36	F.D., F.I.
		34	1180	21/0	—	0·11	68/29	F.I.
		35	1630	13/0	—	0·16	46/24	F.D., F.I.
		36	1380	14/0	—	0·13	Died on the 6th day	
		37	1260	17/0	—	0·12	63/25	F.D., F.I.
III. Vitamin C 28 mgm. per Kg. body weight	Protected.	38	1200	18/0	1·2 c.c.	0·12	67/33	F.D., F.I.
		39	1610	16/0	1·6 c.c.	0·16	49/26	F.D., F.I.
		40	1310	13/0	1·3 c.c.	0·13	70/30	F.D., F.I.
		41	1240	18/0	1·2 c.c.	0·12	55/30	F.D., F.I.
		42	1730	14/0	1·7 c.c.	0·17	48/28	F.D., F.I.
	Control.	43	1670	14/0	—	0·16	64/25	F.D., F.I.
		44	2000	16/0	—	0·2	50/30	F.D., F.I.
		45	1240	18/0	—	0·12	48/21	F.D., F.I.
		46	1460	13/0	—	0·14	70/34	F.D., F.I.
		47	1380	17/0	—	0·13	68/30	F.D., F.I
IV. Lipocaic 0·2 gm. per Kg. body weight by mouth.	Protected.	48	1670	18/0	0·33G	0·24	25/3	C.S.
		49	1290	15/0	0·26G	0·12	24/4	C.S.
		50	1610	15/0	0·32G	0·16	21/3	C.S.
		51	1320	14/0	0·26G	0·13	18/2	C.S.
		52	1900	17/0	0·38G	0·19	20/3	C.S.

Concentrated liver extract also exerted a protective effect as very little microscopic changes (Figs. 3, 4) or changes in the liver efficiency were noticed in the animals of this group, Vitamin C did not show any protective action as the amount of damage produced in the control and the protected group was the same (Figs. 5, 6). Lipocaic exerted a very well marked protective action as the microscopic changes in the liver of the animals of this series were almost insignificant (Figs. 7, 8) and the efficiency figures too were little altered.

CLINICAL INVESTIGATIONS

After having studied the action of these drugs on animals, experiments were repeated on 47 cases who were admitted in the hospital for minor operations which were performed under chloroform anæsthesia and the exact quantity of chloroform given to each case was recorded. In a group of seven healthy individuals tests for liver efficiency were performed before and after chloroform administration. The average normal figures obtained following the Brom-sulphthalein test of Rosenthal (1925) were 29·34 per cent of the dye in 5 minutes' sample of blood and an absence of the dye in 30 minutes' sample. After chloroform anæsthesia, the liver efficiency was greatly reduced as the average increase in the retention of the dye being 57 in 5 minutes' and 30·7 in 30 minutes' blood sample. After 48 hours the liver showed a tendency to recover from the effect of chloroform.

Ten cases were selected for each drug and the respective protective substance was given to nine cases

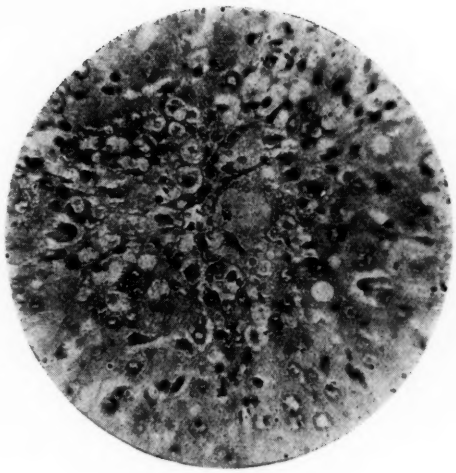

FIG. 1.

Photomicrograph of the section of liver of rabbit taken after seven biweekly injections of carbon tetrachloride (0·1 c.c. per kg.) showing extreme degrees of fatty degeneration and infiltration.

FIG. 2.

Photomicrograph of the liver of rabit taken after seven biweekly injections of carbon tetrachloride along with biweekly injections of calcium gluconate showing no fatty changes but a marked cloudy swelling of the cells.

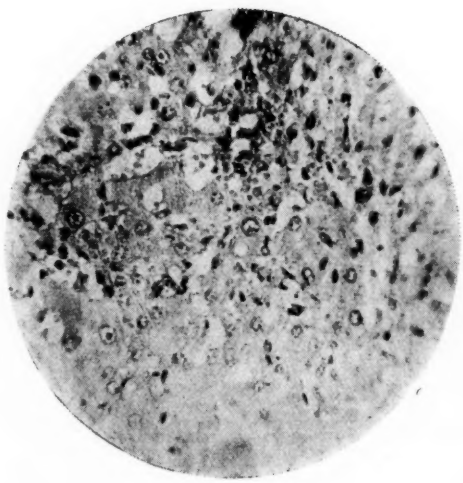

FIG. 3.

Photomicrograph of the section of liver of rabbit taken after seven biweekly injections of carbon tetrachloride (0·1 c.c. per kg.) showing extreme degrees of fatty degeneration and infiltration.

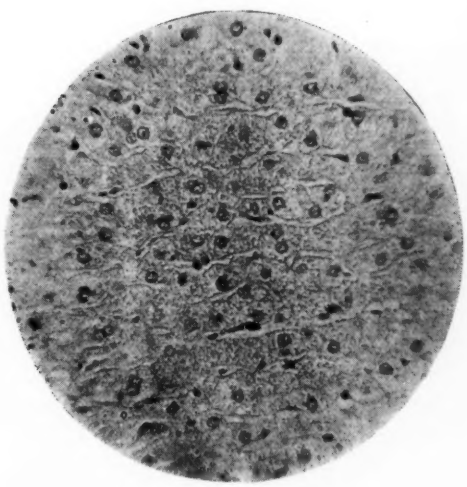

FIG. 4.

Photomicrograph of the liver of rabbit taken after seven biweekly injections of carbon tetrachloride along with biweekly injections of liver extract showing only a slight degree of cloudy swelling.

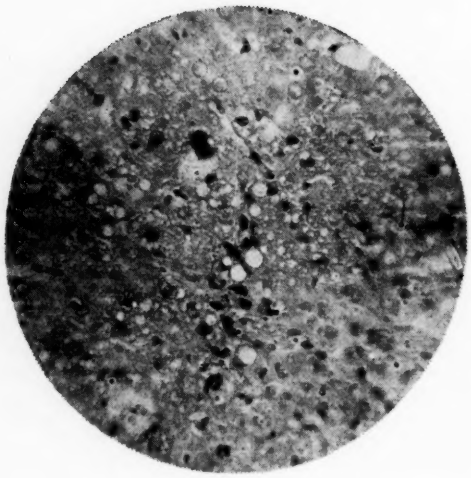

FIG. 5.

Photomicrograph of the section of liver of rabbit taken after seven biweekly injections of carbon tetrachloride (0·1 c.c. per kg.) showing extreme degrees of fatty degeneration and infiltration.

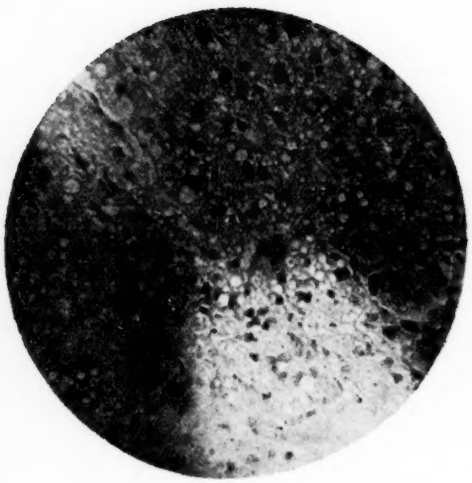

FIG. 6.

Photomicrograph of a rabbit's liver taken after seven biweekly injections of carbon tetrachloride along with biweekly injections of vitamin C showing extreme fatty degeneration and infiltration of the cells.

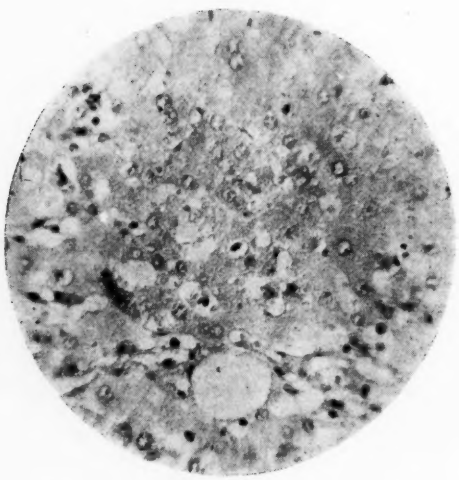

FIG. 7.

Photomicrograph of the section of liver of rabbit taken after seven biweekly injections of carbon tetrachloride (0·1 c.c. per kg.) showing extreme degrees of fatty degeneration and infiltration.

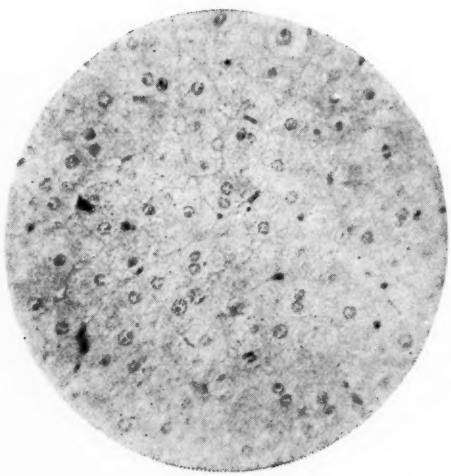

FIG. 8.

Photomicrograph of the liver of a rabbit taken after seven biweekly injections of carbon tetrachloride, along with daily oral administration of pancreatic extract ('Lipocaic') showing no fatty changes and only slight degree of cloudy swelling of the liver cells.

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of the group for eight days before chloroform administration. One case was kept as control in each group. Liver efficiency tests were carried out before and after the experiment. The protective drugs employed were the same as in animal experiments, with the difference that the lipocaic prepared in the laboratory was not used, but freshly prepared extract of one pancreas was given to each case every day. The technical details were practically the same as in animal experiments. The results thus obtained are shown in Table II.

TABLE II—SHOWING RESULTS OF THE EFFECTS OF THE PROTECTIVE DRUGS ON THE PREVENTION OF DAMAGE TO THE LIVER DUE TO CHLOROFORM ADMINISTRATION IN CLINICAL CASES. L. E.=Liver Efficiency

	Number of case	Age and sex	Body weight in lb.	L. E. % (5 & 30 minutes)	Chloroform administered	L. E. % immediately after	L. E. % 24 hrs. after
Calcium gluconate group ..	8 C	22 M	80	25/0	4 dr.	90/30	100/45
	9	9 F	33	30/0	2 dr.	45/20	50/25
	10	10 M	107	35/0	4 dr.	60/30	65/35
	11	16 F	88	25/0	5½ dr.	45/15	50/20
	12	20 M	106	30/0	2½ dr.	55/15	55/15
	13	27 M	102	30/0	4 dr.	50/20	55/25
	14	35 M	136	40/0	4 dr.	60/10	65/15
	15	24 M	130	35/0	2½ dr.	55/15	60/25
	16	45 M	102	45/0	6½ dr.	65/20	65/20
	17	30 M	120	30/0	3½ dr.	60/20	65/20
Liver extract group ..	18 C	40 M	135	35/0	3½ dr.	80/35	100/45
	19	36 M	145	30/0	3 dr.	40/10	45/15
	20	24 F	106	45/0	5 dr.	55/10	60/15
	21	23 M	114	40/0	6 dr.	50/15	55/15
	22	7 M	30	30/0	4 dr.	40/10	45/15
	23	45 M	108	40/0	3 dr.	55/15	60/20
	24	45 M	102	30/0	3 dr.	45/10	50/20
	25	25 M	112	40/0	3 dr.	50/15	55/25
	26	18 F	120	20/0	3 dr.	30/5	40/5
	27	32 M	108	25/0	3 dr.	35/10	40/20
Vitamin C group	28 C	48 F	90	35/0	2 dr.	80/25	95/30
	29	16 F	87	30/0	4 dr.	75/35	85/35
	30	24 F	101	25/0	3 dr.	80/25	80/25
	31	38 M	110	35/0	3½ dr.	65/20	70/30
	32	38 F	102	40/0	7 dr.	100/35	100/45
	33	25 M	130	35/0	3 dr.	85/30	95/40
	34	12 M	54	25/0	4 dr.	75/25	80/30
	35	21 M	124	30/0	3 dr.	40/0	75/20
	36	8 M	40	40/0	2½ dr.	90/30	40/40
	37	16 M	120	30/0	3½ dr.	80/30	90/30
Pancreatic extract group ..	38 C	12 M	55	25/0	2¼ dr.	80/30	95/40
	39	60 F	90	35/0	2½ dr.	40/10	45/15
	40	21 M	126	25/0	6¾ dr.	35/5	40/10
	41	19 M	100	40/0	6½ dr.	70/20	80/20
	42	14 F	80	30/0	4 dr.	40/5	45/10
	43	22 F	102	25/0	4 dr.	30/0	55/25
	44	45 M	105	35/0	1½ dr.	40/10	45/15
	45	25 M	120	25/0	3 dr.	45/15	50/30
	46	60 M	117	20/0	5¾ dr.	35/10	40/20
	47	21 M	134	35/0	4 dr.	50/15	65/20

TABLE III—SHOWING VARIATIONS IN LIVER EFFICIENCY FIGURE BEFORE AND AFTER CHLOROFORM ADMINISTRATION IN CONTROL AND PROTECTED INDIVIDUALS

Drug	Average variation from normal in controls		Average variation from normal in protected		Difference in variation		Protection
	5 min.	30 min.	5 min.	30 min.	5 min.	30 min.	
Calcium gluconate ..	57	30·7	27·6	20·2	29·4	10·5	+
Liver extract	57	30·7	17·33	13·6	39·67	11·1	+ +
Vitamin C	57	30·7	50·4	28·5	6·6	2·2	—
Pancreatic extract ..	57	30·7	17·9	14·1	39·1	16·6	+ +

It is evident from Table II above that liver extract offered a better protection than pancreatic extract or calcium gluconate, and vitamin C had no effect at all. The average variations from the normal in liver efficiency figures were compared and the difference between the variations in control and protected group of cases gave an index of protective power of the drug (Table III).

DISCUSSIONS

Comparing these results with the results of animal experiments it is found that pancreatic extract exerted

a less powerful protective action in clinical cases. The fresh pancreatic extract is probably less fat free than lipocaic hence is less efficient, as fat itself makes the liver more susceptible to the effect of chloroform.

The mechanism involved in the protection of liver still remains obscure. Various views have been put forward but none of these theories fully explain the actions of all the chemically dissimilar drugs. Calcium and liver extract might be altering some phase in fat metabolism. Pancreatic extract probably exerts its beneficial effect by supplying some specific substance to the liver whose absence leads to the fatty changes in it. This substance may be formed in the alpha cells of the pancreas. Toxic substances may initially damage the lipocaic-producing cells of the pancreas with a secondary derangement in fat metabolism with the resultant fatty changes in the liver.

This pancreatic hormone may prove useful in the treatment of liver diseases like infantile cirrhosis which rarely responds to any other treatment. A vast clinical trial of this substance deserves attention.

Summary and Conclusions

Calcium gluconate, concentrated liver extract and pancreatic extract protect the liver against the damage caused to it by chloroform and carbon tetrachloride, and vitamin C failed to have any protective effect as is found in this series of experimental and clinical trials.

Presence of even traces of fat in the pancreatic extract diminishes its power of protection.

Toxic substances probably have their initial damaging effect on the pancreas and interfere with the normal production of the specific substance which has an influence on the metabolism of fat. An absence of this from the blood leads to the fatty changes in the liver. Pancreatic extract if administered with the toxic substances makes good the loss in the specific substance and prevents the changes occurring in the metabolism of fat.

Acknowledgment

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ANTIBACTERIAL ACTION OF 'POLYPORIN'

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The fungus belonging to the group of Penicillium (Ascomycetes) weighs a fraction of a grain while the weight of Polypores goes by pounds, some of them weigh about 40-50 lbs.; in fact they are giants in the fungus world and belong to the group of higher fungi Basidiomycetes.

Polypores are very stable as their genes are in a well-balanced state. The author (1934, 1938) could not produce any mutation by application of minute doses of strong poisons like mercuric chloride, potassium bichromate, copper sulphate, copper acetate and of acids like citric, oxalic, formic, hydrochloric and mallic in one per cent solutions; neither any genetic change could be produced by strong doses of ultra-violet ray, x-ray (both hard and soft) and radium. In one case when 120 mg. of radium was applied on the glass surface of an inverted Petri-dish-culture continuously for 6 days, a temporary damage was produced but ultimately complete recovery was noted in the course of the fourth and fifth subcultures. Polypores are extremely resistant to such radiations, no permanent change could be produced in them; but in penicillium, Thom has induced genetic change by application of chemicals, by change of temperature and by radiation. The groups, Penicillium and Aspergillus are examples of very unstable fungi—their genes are always in a very unbalanced state! It may be expected that more stable filtrates will be produced from stable groups of fungi like Polypores.

When a Polyporus sp. is grown in Czapek-Dox liquid medium (pH 7) in conical flasks at room temperature (29° to 32°C) for 5 to 10 days, the medium remains uncoloured and the pH of the medium comes down to 5·8. The medium is now aseptically filtered through Seitz filter, the fungus met is left out and the filtrate thus obtained is tested against pure cultures of *staphylococcus aureus* (Oxford strain) both by the plate-method (agar-cup method) and by the dilution method of broth cultures. Filtrate is found to be highly bactericidal. When the filtrate in the concentration of 1 to 20 is poured in a broth culture of *staphylococcus aureus*, the latter becomes clear in the course of 4 to 5 days with a little sediment at the base of the tube. A subculture of the sediment after 9 days shows no growth in the broth culture-tube when examined both visually and microscopically. In agar-cup method when 6 drops of filtrate from a 11 days' subculture of *stapyhlococcus aureus* are poured in the hole of 5 mm. diameter, 27 mm. zone of inhibition is produced in the course of about 20 hours. The filtrate 'Polyporin' (Bose 1944) retains its potency for about a month at room temperature (22° to 32°C) if maintained in a sterile condition; Polyporin has been tested *in vitro* in plate cultures (agar-cup method) of B. typhosus, vibrio comma, B. Fexner and B. coli 14-25 mm. clear zones have been obtained in typhoid and cholera plates.

Attempts to extract the antibacterial substance from the culture filtrate with ether, chloroform and active charcoal resulted in a considerable loss of its antibacterial property. A search was, therefore, made for solvents which would extract the anti-bacterial substance from aqueous solutions. The method of Berger (1945) with slight modification was found to be suitable for the extraction and preparation of sodium salt of Polyporin. Owing to the fairly stable nature of the substance the extraction was carried out at the room temperature without any adjustment of pH of the original culture filtrate. The sodium salt was found to be stable in aqueous solution though it was rapidly inactivated by heating above 80°C. Attempts are being made to prepare the sodium salt in a purer form with the kind co-operation of Dr. N. K. Sen, Professor of Chemistry of the Presidency College, Calcutta. This sodium salt of Polyporin is found to have greater potency than the crude filtrate; in broth cultures of *B. typhosus* and *staphylococcus aureus* the sodium salt produces lytic action in the course of about 20 hours.

Sporophora-extracts from dried fruit-bodies of the Polyporus in distilled and saline water produce clear lytic zones in plate-cultures (agar-cup method) of *B. typhosus, vibrio comma* and *staphylococcus aureus* (Oxford strain); thus, they have distinct bacteriolytic action.

Two guinea pigs were inoculated interperitoneally on 21st June, 1944, with 1 c.c. of the whole filtrate, Polyporin, and one guinea pig as control was inoculated in the same way with 1 c.c. of the Czapek-Dox medium; all the three animals were almost of the same weight (220 gms.). All of them remained well and healthy by the next day and thereafter, showing the filtrate to be completely non-toxic. Polyporin is non-hæmolytic, in intramuscular injections it produces no pyrogenic effect in men.

Acknowledgment

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ERYTHROCYTE SEDIMENTATION RATE IN PREGNANCY*

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The study of erythrocyte sedimentation rate dates from the year 1921, when Fahreus showed that the sedimentation rate of erythrocytes increases both in physiological conditions, *e.g.,* pregnancy and in pathological conditions, *e.g.,* tuberculosis. He also stressed on its importance in assessing the prognosis of a case. Since then extensive work has been done in sedimentation rate of erythrocytes in normal individual and in various morbid states, with very little progress in its clinical application. Nevertheless its study is very interesting and useful. The object of this paper is to give figures as were found in pregnant cases admitted in the Hospital for Women in the Prince of Wales Medical College, Patna.

The technique followed was that of Westergren; 1·6 c.c. of venous blood was taken from the subject, (who was fasting, and was in rest) into a syringe containing 0·4 c.c. of 3·8 per cent sodium citrate solution; and sucked in Westergren tube upto zero mark, allowed to stand vertically in a special rack, placed on a firm steady table. One hour and two hour readings were taken. The experiments were done at room temperature. Investigations were made on ten apparently normal non-pregnant cases of child-bearing age, and seventy-five apparently normal pregnant cases, and few cases of pregnancy associated with other diseases. We know that certain changes take place in the blood of normal pregnant women, *i.e.,* the blood volume increases, red cell count shows very little difference from the normal; leucocytosis of varying degree is present and there is very small difference in normal hæmoglobin percentage and hæmoglobin percentage in pregnancy. In pregnancy the figure for plasma protein content is decreased but there is increase in fibrinogen content.

The results observed at Patna are tabulated according to the number of pregnancy, its duration and age of the patient.

Table I—Showing ESR According to the Number of Pregnancies

No. of cases	*No. of preg.*	*Av. ESR in mm.* 1st hr.	2nd hr.	*ESR range in mm.* 1st hr.	2nd hr.
8	1	78·2	103	34-137	102-142
9	2	77·0	81	54-93·25	66-133
12	3	65·6	97	32-120	56-137
10	4	62·4	88·6	20-108	45-124
3	5	80	99·5	61-112	99·5-
2	6	97			
2	7	50·5			
2	8	75·0		75-126	-140

* Read at the Scientific Section of the XIX All-India Medical Conference held at Patna, April, 1943.

TABLE II—SHOWING ESR ACCORDING TO PERIOD OF GESTATION

No. of cases	Duration of preg.	Av. ESR in mm. 1st hr.	2nd hr.	ESR range in mm. 1st hr.	2nd hr.
1	12	33	67·5		
1	16	28	63·0		
1	18	38	73·0		
1	22	65			
2	24	65	100		
1	26	41	74		
2	29				
5	32	53·2	65·6	21-78	47-127
1	36	71·0	100·0		
7	37-38	60·8	100·6	34-99·5	66-137
3	39	91·6	121·6	70-120	100-138
25	40	74·3	92	32-138	45-140

TABLE III—SHOWING SEASONAL VARIATION OF ESR.

No. of cases	Season	Average ESR in mm.
2	September	112·5
1	October	87·5
2	November	83·5
2	December	66·5

TABLE IV—SHOWING ESR IN APPARENTLY HEALTHY NONPREGNANT CASES

No. of cases	Av. ESR in mm. 1st hr.	2nd hr.	ESR range in mm. 1st hr.	2nd hr.
10	25	37·5	3-72	7-57

TABLE V—SHOWING ESR IN PREGNANCY ASSOCIATED WITH OTHER DISEASES

No. of cases	Associated conditions	Av. ESR in mm. 1st hr.	2nd hr.	ESR range in mm. 1st hr.	2nd hr.
1	Albuminuria	148	158		
3	Abortions	46·3	80·0	33-68	70-103
1	Glossitis	61·0			
2	Pyrexia	140·0	149	136-145	148-150
1	Osteomalacia	78·0	127		
1	Adenitis	125	140		
1	Breast abscess	162	170		
1	Conjunctivitis	66·5	105		
1	Vaginitis	66·5	105		
1	Eclampsia	62	94		

The figures are not corrected for anæmia, cell volume, variation in temperature and other physical variables for simple reason that it has not been possible for me to do the same at present, or no correction chart or graph has been worked out for the figures presented.

Comparing the normal figures in pregnant women, the Patna figures (25-37·5 mm.) is higher than the figures mentioned by others. It is interesting to note that Patna figures are higher than Calcutta ones (29-52 Napier and Das Gupta). They have ascribed the difference between their results and those of others to be due to difference in temperature of the countries or the temperature at which experiments were done. I have observed only seasonal variation (Table No. III) and found erythrocyte sedimentation rate highest during September and lowest in the month of December.

The E.S.R. in pregnancy is affected by the factors influencing in a non-pregnant woman as well as the period of gestation, number of pregnancy and the age of the case. It is apparent that E.S.R. is increased after 12th weeks and that a definite increase does not occur after 20th week. Further, there is a definite percentage

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CATARRHAL JAUNDICE AND ACUTE YELLOW ATROPHY OF THE LIVER

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The intention of this communication is to draw attention to a changed outlook on the relation between catarrhal jaundice and acute yellow atrophy of the liver and to offer evidence against the changed outlook.

THE JAUNDICE LEADING TO THE ATROPHY

According to an easily available authority, (Hurst, 1934) catarrhal jaundice was *usually* a non-hepatic but *occasionally* a hepatic affection. 'In exceptional circumstances the hepatitis may proceed to fatal necrosis'.

According to the same authority (Hurst, 1937) 'The liver is affected only in the comparatively rare cases, in which the jaundice persists for a considerable period, when the usual degenerative changes which follow obstruction to the flow of bile gradually develop'.

According to older authorities (Rolleston and McNee, 1929) 'Most if not all cases of so-called catarrhal jaundice are due to an infection involving both the bile ducts and the liver cells, that is to say, a combination of hepatitis and cholangitis'. . . . 'Although the majority of cases are mild it must always be remembered that the clinical picture may change and cases of simple catarrhal jaundice suddenly develop all the phenomena of icterus gravis and acute necrosis (yellow atrophy) of the liver'.

The situation is summed up by other authorities (Elliott and Nadler, 1940) as follows: 'Ordinary catarrhal jaundice is believed to be frequently due to the degeneration of the liver with multiple areas of necrosis. The most severe types of acute hepatitis show a diffuse acute necrosis (yellow atrophy) . . .' Again 'Classical acute yellow atrophy appears to be simply a fulminating type of a disease that also occurs in a mild form which may produce no symptoms during the acute stage but which ends in cirrhosis. It has been shown that acute, subacute and chronic forms occur with the same underlying pathology'.

The easy availability of the first authority and no reference to the connection between the two diseases elsewhere in easily available text-books may lead to a belief that the catarrhal jaundice does not lead to the yellow atrophy: Hence this communication.

We present below report of three cases. The first two were seen by one of us (S.D.S.G.) and described from memory while the third case is from hospital records.

CASE REPORTS

Case 1—Seen in 1920. A young sepoy of slight build was admitted to a C.C.C.S. in Waziristan with a

diagnosis of catarrhal jaundice. The liver was enlarged and hard, and icterus well developed. Constitutional symptoms were negligible. One night the patient was reported to be delirious. One obvious change noticed was the disappearance of the enlarged and hard liver. The patient died.

Case 2—Seen in 1926. A young mule driver of medium build was admitted to an I.S.H. in the Southern Command with a diagnosis of catarrhal jaundice. The liver was enlarged and hard and icterus well developed. Constitutional symptoms were negligible. One night the patient was reported to be delirious and violent. One obvious change noticed was the disappearance of the enlarged and hard liver. The patient was secured in bed and given one pint of saline subcutaneously and intravenously. Diuresis commenced within a short time and the mental condition improved. Two more injections were given during the next 24 hours. The diet was limited to glucose and later glucose and milk. Within a week the patient was well on the way to recovery. In a fortnight or so he was given one month's leave. He returned to duty at the expiration of leave and was fit in all respects excepting the size of the liver which was much reduced.

Case 3—Seen in 1944. A young adult, male, admitted to the Carmichael Hospital for Tropical Diseases for the treatment of catarrhal jaundice not amenable to outdoor treatment. On admission the liver was found to be enlarged, two inches from the costal margin, and tender. Jaundice was marked. Spleen was about an inch below the costal arch. Van den Bergh's reaction of the blood serum showed positive results both in direct and indirect tests. The bilirubin content was 12 mgm. per 100 c.c. of blood. Leptospirosis was excluded.

The patient was put on an immediate treatment with glucose intravenously and vitamins K and C by injection.

He became restless on the third day of admission, with sudden appearance of signs of toxicity, and semi-comatose on the 4th day. Restlessness persisted. Coma supervened on the 5th day ending in death on the 7th day. During this period his liver was found to have diminished in size but the tenderness remained and probably increased.

Relations permission for a post mortem examination could not be obtained. The disappearance of the previously enlarged liver, however, was obvious in life.

The Nomenclature

In the current literature the question of 'Epidemic Infectious Hepatitis' has been discussed lately (Editorial, 1943). The 'Catarrhal Jaundice', however, has emerged again (Leak, 1944). The expression denotes, *conveniently*, a comparatively trivial morbid state. That the trivial morbid state may take a serious turn at times is the purpose of this communication to emphasise.

Acknowledgment

The writers are indebted to the authorities of the Carmichael Hospital for Tropical Diseases for the third case.

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of cases with normal E.S.R. In the present series there is no marked increase till eighteenth week, but from twentieth week onwards E.S.R. shows constant increase and is maximum during the last weeks of pregnancy. It must be mentioned that the number of cases done is too small.

In Table I, primigravida, and eighth gravida show higher E.S.R. than third and fourth gravida. So the result is not definite. But from primigravida to fourth gravida there seems to be decrease in E.S.R., *e.g.*, from 78·2 mm. to 62·4 mm.

In the present investigation the number of cases below twenty years are negligible. Between twenty and thirty years E.S.R. is maximum at twenty five years, which should be as it is the optimum child-bearing age. Whereas the values for the age of thirty and thirty-five are low.

The number of cases of pregnancy associated with other diseases are few. Erythrocyte sedimentation rate in cases of abortion was 46·3 mm. in first hour with range of 33·68 mm. which shows small increase over the normal pregnancy. So also in eclampsia, albuminuria and inflammatory conditions and pyrexia, associated with pregnancy.

The other causes of higher E.S.R. in Patna may be the presence of latent diseases and syphilis. In this series Wassermann reaction was done in most of the cases, and found to be negative. Endemic diseases were not excluded. Whether liet of the person has got any relation with E.S.R., is another factor. The cases observed, were mostly non-vegetarian.

The erythrocyte sedimentation rate in pregnancy is known to be higher than standard figure for non-pregnant healthy women. All observers have found E.S.R. somewhat higher in women than men.

It is regretted that as yet the total number of cases examined is too small to give statistically significant figures, and the factors such as cell volume and temperature have not been considered. It is hoped that the collection of figures will continue and with the aid of records made by others fully significant findings may eventually be obtained.

VESICULAR AND BULLOUS ERUPTIONS OF THE SKIN

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Vesicular and bullous eruptions of the skin may be considered under the following groups:

A. Due to infection by: (1) Streptococcus and staphylococcus, *e.g.,* impetigo contagiosa, bullous impetigo of infants (the so-called pemphigus neonatorum), bullous syphilide of the new born. (2) Virus, (*a*) herpes simplex. (*b*) herpes zoster. (*c*) varicella.

B. Due to ingestion of drugs, *e.g.,* (1) bromides. (2) iodides.

C. Due to mechanical causes. (1)insect bites, *e.g.,* the so-called spider-lick. (2) burns. (3) hydroa-aestivale. (4) dermatitis medicamentosa.

D. Due to unknown causes. (1) epidermolysis bullosa. (2) erythema multiforme. (3) dermatitis herpetiformis. (4) pemphigus. (5) cheiropompholyx.

Infective Group

Impetigo contagiosa (serum-pox)—The causal organism is a streptococcus, usually of a hæmolytic type, *e.g.,* streptococcus pyogenes. Streptococcus fæcalis may also be isolated sometimes. Staphylococci are also present in some lesions. The disease is very contagious and spreads from one part to another and also from one person to another. It is very common in children. Its common site is on the face; but it may occur anywhere. In scalp and the beard the staphylococcal infection supervenes. This purulent folliculitis is difficult to cure. The initial lesion is an erythematous macule which rapidly becomes a flaccid vesicle. This enlarges at the margin and the centre bursts. After rupture the serum exudes and dries up forming the characteristic yellow crust. The disease has got to be differentiated from (1) crusted lupus, (2) a crusted tertiary syphilide, (3) a crusted eczema, (4) varicella.

Treatment is simple. In streptococcal variety after removing the crusts by applying starch and boric poultices, a weak mercurial ointment, *e.g.,* five grains of ammoniated mercury in an ounce of vaseline may be prescribed. In resistant cases the injection of a streptococcal mixed vaccine or autogenous, if possible, is of value. Sulphanilamide group of drugs may also be tried. Ultra violet rays in small doses after the crusts have been removed, are a useful adjunct to treatment.

Bullous impetigo of infants—It is caused by streptococcal infection. It has to be differentiated from congenital syphilis. It is sometimes referred to as pemphigus neonatorum. It occurs due to lack of antiseptic precautions in the puerperium. The essential lesion is a flaccid bulla which grows with moderate rapidity. The contents are serous but if contamination with staphylococci supervenes they may become purulent. The original infection may occur anywhere, the fingers being the common site. It is very rarely found on the palms and soles.

The blebs should be opened up and loose pieces of epidermis cut off. The patient should be immersed in a bath containing one per cent permanganate of potash at a temperature of 100°F for 30 minutes every day. After the bath the parts should be dried up and a weak mercurial ointment, *e.g.,* five grains of ammoniated mercury in an ounce of vaseline is to be applied. Sulphanilamide therapy may be given a trial also.

Bullous Syphilide of New Born—It occurs immediately at birth. The bullæ are usually confined to the palms and soles symmetrically. Other signs of congenital syphilis are also present.

Virus group—Herpes simplex. (herpes labialis, herpes genitalis, herpes febrilis). The disease is caused by a filtrable virus. The appearance of herpetic vesicle is preceded by some pruritus and usually by burning pain. It starts as an acute vesicular eruption on any part of the skin or mucous membrane (the common sites being the lips, nose, genitalia, etc.). The disease is probably contagious. Tendency to recurrence is very marked. The cold sore which develops so frequently on women's lips at the time of their periods is an example of herpes simplex. Menstruation, over-indulgence in coitus, exposure of the face to cold and acute rhinitis are the commonest predisposing factors. The vesicles are packed together and become seropurulent and rupture. Later on crusts form and healing takes place in about 10 days. Genital herpes occurs on glans penis and prepuce in males and both on the inner and outer aspects of the labia majora and minora in the female. It is painful and glands are swollen. It should be differentiated from soft sore, syphilitic chancre and herpes zoster.

Treatment can be summarised as follows: Cleanliness of the affected part, application of a cooling lotion or powder. Another line of treatment is by auto-inoculation. Repeated intradermal inoculations are made at 48 hours intervals with fluid from the lesions. For recurrent cases x-ray treatment frequently may be tried, auto-hæmotherapy is useful in some cases.

Herpes zoster is caused by a virus which has a close relationship to varicella. The posterior nerve root ganglion cells are involved. The eruption is always grouped. It is usually unilateral but bilateral zoster is sometimes seen. As a rule herpetic vesicles do not suppurate. It is accompanied from the first by a painful enlargement of the nearest lymphatic glands. Gradually the vesicles dry up and form scabs. One attack of herpes zoster confers immunity against another attack. In herpes ophthalmicus, vesicles appear on the side of the nose at first. It denotes that the ciliary ganglion is involved and watch must be kept on the eye for corneal ulceration, conjunctivitis, etc.

Locally the vesicles may be dressed with a mild antiseptic dusting powder containing 2 per cent acid salicylic, or those may be painted over by lotio calamine or flexile collodion. Three injections of posterior pituitary extract 1 c.c. intramuscularly on alternate days will relieve the pain to a great extent. Its contra-indications are pregnancy, cardiac disease and hyperpiesia. Vitamin B_1 therapy in the form of injections is worth a trial. Locally ultra-violet and x-rays are also useful.

Ingestion of Drugs

Bromides and iodides—Ingestion of these drugs causes papular, nodular, vesicular and even bullous eruptions. Vesicular lesions also may occur in the mucous membranes. The hands, feet, legs, face and forearms are the sites of the lesion.

As a prevention of iodide and bromide eruptions, the addition of a few minims of liquor arsenicalis is advocated while treatment consists in withdrawal of the drug, local treatment being sometimes useful.

Mechanical Causes

Insect bite—This causes dermatitis with vesicular or bullous eruptions. The most common example is the so-called "spider-lick". Apply some soothing lotion or bland powder.

Dermatitis medicamentosa—This is due to some irritant bazar medicines or even some pharmacopœial drugs against which an individual is sensitive.

The use of the offending drug is stopped and some soothing lotion or dusting powder applied.

Hydroa Aestivale (Hutchinson's summer prurigo). This disease is due to the action of the actinic rays of the sun. It occurs in childhood and in young age. Vesicles or even bullæ are formed on the exposed parts of the body. It may be familial. The disease is manifest every summer but usually disappears during the winter. Barber and others have shown that this disease is associated with hæmatoporphyrinuria. Stercoporphyrin is also found in the fæces. The liver and spleen are usually enlarged. The rays responsible for the eruption are blue and violet bands of the visible spectrum. After puberty it tends to disappear.

Liver therapy is worth a trial. Protect the the skin from direct sunlight. Quinine cream or tannic acid lotion are now the favourite methods of affording protection (MacKenna).

Unknown Causes

Epidermolysis bullosa—This disease is congenital and characterised by the appearance of bullæ as the result of trauma. There is a familial tendency and it starts in childhood. The lesions appear on the pressure points, *e.g.,* on the knuckles, elbow joint, knee joint, etc. The bullæ may be single or multiple and do not become confluent. Their contents are serous. The lesions are painless. Secondary infections retard healing and may lead to painful fissures. There are scar marks especially over pressure points to mark their site in cases of epidermolysis bullosa.

Protect the child's skin from any trauma as a prophylactic step. Avoid secondary infection. Glandular therapy especially parathyroid substance may be tried. Blood transfusion from healthy donor is worth a trial

Erythema multiforme—The condition is due to some toxins circulating in the blood. As a rule there are prodromal symptoms, *e.g.,* malaise, rise of temperature, gastrointestinal disturbances, coryza, tonsillitis or pains in the joints. It is more common in women than in men. The lesions may be macular, papular, urticarial, vesicular, bullous or hæmorrhagic. The dorsal aspects of the limbs are more frequently affected than the anterior, and the frequent sites are the back of the hands and fingers, the dorsum of the foot and the elbows and knees. There is a sensation of itching and burning. Sometimes vesicles and bullæ may form. The vesicles or bullæ dry up, forming scales or crusts. Ulceration may follow the rupture of the bullæ. The mucous membranes may also be affected.

Rest in bed is advisable. Diet should be nourishing but light. Red meat and articles of diet rich in purine bodies should be avoided. Intestinal antiseptics such as kaylene, salol, dimol, etc. can be given. Salicylates in full doses, quinine, alkalies and calcium lactate may be given by mouth. Locally calamine lotion to which ichthyol gr. ii to an ounce has been added relieves the burning and itching. If bullæ develop they should be opened up and dressed with Lassar's paste.

Dermatitis Serpetiformis—Long regarded as a form of pemphigus but ultimately shown to be a definite and separate clinical entity by the work of Duhring and Brocq.

The eruptions are polymorphous and consist of papular, vesicular or occasionally bullous eruptions on erythematous base with itching and pain. It occurs in both sexes between the age of 20 to 40. Nervous strain is supposed to be a predisposing factor. Auto-intoxication from some septic focus in the body is likely to be the cause. The vesicular fluid shows eosinophilia and the differential blood count also shows eosinophilia even upto 50 per cent in some cases. The disease is intractable and tends to recur lasting for weeks with intervals of freedom. Due to itching the vescicles are scratched and infection takes place. They leave scars which are usually pigmented. The common sites are the posterior folds of the axillæ, abdomen, groin, back and the buttocks. As a rule the hands and feet remain free.

Rest in bed and light diet are advised. Avoid constipation. Septic foci in teeth, tonsils, ear bowels, etc., should be sought for and treated. Auto-vaccine should be tried in such cases. Arsenic, sodi salicylate and quinine may be given by mouth. Auto-hæmotherapy, Germanin (Bayer), calcium parathyroid therapy and intravenous injections of sodium thiosulphate may be useful. Dowling and Barber have obtained good results by injections of proteose. Locally, soothing antipruritic ointments or lotions, x-rays or ultra-violet therapy may diminish the itching.

Pemphigus—There are four clinical varieties: Acute pemphigus, pemphigus chronicus or pemphigus vulgaris, pemphigus foliaceous and pemphigus vegetans.

Pemphigus chronicus is usually a chronic and fatal disease characterised by the appearance of bullæ of different sizes, and irregular distribution. Focal sepsis is a probable cause of this disease. It frequently occurs in patients above 40. The contents of the bullæ are sterile and clear and later become purulent due to secondary infection. Later the bullæ burst leaving a painful raw surface.

The prognosis is grave. 60 to 70 per cent of the cases prove fatal, in 3 to 6 months time.

Good nourishing diet is essential. General tonics to maintain strength. Germanin is given intravenously in doses of 0·5 grm and 1·0 grm. A course of 10 injec-

(*Continued at foot of col. 2, p. 230*)

TOXIC EFFECTS OF SULPHONAMIDES AND THEIR TREATMENT PARTICULARLY WITH NICOTINIC ACID

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It is stated that 'over one-half million pounds of sulphanilamide' was used in 1940 alone in the United States (Schattenberg and Harris, 1943). It means a consumption of over 200 tons or 6,000 maunds of the drug in one year and it is claimed that sulphonamide therapy in spite of the war conditions has definitely lowered the mortality rate in the civilian population (Stocks 1943). These may be statistical jargons but the conquest of sulpha drugs is indeed overwhelming. Most of the common mischief-making bacteria have already been subdued and the others are being continuously attacked. Even the ever-resistant waxy outer coat of tubercle-bacillus is being penetrated by a fatty acid component of a new member of the group (sulfa-benamide) which augurs well to our continuous struggle against the ever-elusive enemy of our youths—tuberculosis. Which microscopic and filtrable viruses would resist the onslaught of the existing and future combinations of sulphonic acid with other substances is hard to predict. We believe most of them will go down but along with their defeat whether the delicate human tissues would escape injury and the organs of the body would or would not show late and residual effects due to the repeated use of these poisonous drugs is still unknown to us. We believe the profession will sooner or later meet with certain number of weak hearts, damaged livers, partially functioning kidneys, unstable nervous and mental mechanisms, deranged gastro-intestinal tracts, unbalanced dermal and cutaneous tissues and injured reticulo-endothelial, lymphoid and circulatory systems. The drugs are probably bacteriostatic and not bactericidal in their action. They are definitely of low acute toxicity but to be effective a definite concentration of them is required to be produced and maintained in the body fluids. This needs adequate doses repeated at fixed intervals and if special care is not taken and some time in spite of the care toxic effects are produced. Heroic doses cause severe damage while desired results cannot be obtained by therapeutically inadequate dosage. Toxic or no toxic effects these drugs will, therefore, be used freely but for the sake of rational therapy the general practitioners should see that:—

1. The drugs are used now for only those indicated diseases which show high mortality, delayed healing and uncertain or no cure under ordinary treatment and not for those maladies which are easily amenable to simple remedies; 2. the experimental use of these drugs is left for the persons and institutions doing clinical research; 3. efforts are made to give minimum quantity for shortest period consistent with the efficient action of the drugs on the diseases and to learn to recognise the known toxic effects and to deal with them efficiently and that 4. familiarity with the therapy is not allowed to breed contempt for it with disastrous results to the health of the patients, nor the fear of the toxicity be allowed to bring discredit to the drugs by using them in inadequate dosage.

British Medical Journal (1943) published a reply to a query on this point in the following authoritative terms. "It is futile and may actually do harm to give only a ½ gm. tablet t.d.s. and useless in most cases to continue treatment for more than a week if no effect has been obtained. If it is indicated at all it demands adequate dosage usually not less than 1 gm. of the drug 4-hourly for an adult." It means that 6 gm. a day is the usual dose but Waterston and Doharty (1943) gave 22 gms. or 44 tablets in 40 hours to some of their cases. Anuria was the result. They saved their cases by timely cystoscopic ureteral catheterization but in the absence of such a highly specialized procedure the cases would have got uræmia and ended fatally. They, however, treated another series of 200 gonorrhœal cases with reasonable doses without any complications and opined that unduly high dosage though more effective was responsible for anuria.

Toxic Effects of Sulphonamides

The late and residual effects have not yet been recorded but the immediate untoward reactions concern five systems of the body. The gastro-intestinal, circulatory, nervous and dermal symptoms are toxic and allergic in nature while the renal ones are mostly of mechanical and obstructive type. The known toxic symptoms are:

1. *Alimentary system*—Anorexia, nausea, vomiting, jaundice, hepatitis. They all appear within 48 hours except hepatitis which may come after a week.

2. *Nervous system*—Headache, dizziness, depression, prostration, mental confusion, disorientation, mental lethargy, errors in judgment, peripheral and optic neuritis and optic atrophy. They appear within three to four days except neuritis and atrophy which follow prolonged use of the drugs.

3. *Circulatory system*—Simple and hæmolytic anæmia, leucopenia and agranulocytosis, diminution in oxygen carrying capacity and content of blood, cyanosis and auto-hæmagglutination. They appear in three to five days except agranulocytosis which appears later than 10 days.

4. *Cutaneous system*—Sensitization of skin with itching, erythematous papules in morbilli or roseola form, œdema, urticaria, vesication, pustulation and even exfoliative dermatitis, conjunctivitis peculiar to sulphathiazole and drug fever. They appear from 8th to 14th day.

5. *Renal system*—Oliguria, microscopic and gross hæmaturia and anuria with its sequelæ. They appear later, after 17th day or so, except microscopic hæmaturia and mild oliguria which may come very early and in fact all of them may appear early with high dosage and in moribund patients receiving unsuitable drugs.

6. *Drug fever* and other anaphylactoid symptoms may come after the original fever is declined or on readministration of the drug after a time.

Nature of Toxic Lesions

Very little is known as yet about the kind of pathologic and toxic damage of the living tissues in man. Some workers have reported changes in liver, kidney and spleen and other organs in rats but others fail to find the same. Degenerative changes following high dosage in the brains and spinal cords of dogs and cats have been noted but not observed in man. Antopel (1940) however, reporting the results of necropsy on four cases which had renal systems noted degenerative changes in their kidneys and observed that there were 'localised non-necrotizing hæmorrhagic papillitis and pyelitis in the areas with severe tubular degeneration'. However, when viewed in the light of above observations the case of the girl who lost her vision due to unduly prolonged use of sulphonamide with ophthalmoscopic evidence of degenerative lesion of optic nerve and complete recovery with a vitamin the deficiency of which causes severe degenerative lesions in human body which dramatically improve in making good the deficiency makes the present writer believe that the toxic irritation produced in the human tissues and organs by sulphonamide poisoning ultimately leads to degenerative type of lesions. This appears to be in accord with other workers' observations, numerous in case of animals but scanty in man. The causation of toxic symptoms exhibited by the above mentioned five systems could be explained on this assumption though the hæmaturia and anuria are now definitely known to be produced by mechanical irritation and blockage during the excretion of insoluble crystals produced by the conjugation in the liver of a part of ingested sulphonamides.

Causation of Toxic Effects

Alimentary symptoms—Nausea, vomiting and uneasiness of gastro-intestinal tract come within 24 to 48 hours of ingestion of particularly sulphapyridine. They are believed by some to be due to acidosis which is relieved by alkalis. Acidosis may indeed be present in cases which are sick enough to need the drug but I believe that these symptoms are due to toxic irritation as they could easily be relieved equally by stopping the exhibition of drug, by nicotinic acid or by giving the drug suspended in mucilage. We may be able to relieve these symptoms when mild by sodii bicarb but this should not deceive us for if the drug is in high concentration or the body cells are in subnutrition or low vitality state they all the same get irritated and in the end degenerate and we get toxic hepatitis and jaundice which may end in hæmolytic anæmia and is often accompanied with the evidence of the damage of other tissues as exhibited by frequent association with it of exfoliative dermatitis and signs of polyneuritis. We must know that the damage however mild is not of simple nature and we need something more than sodii bicarb to guard against severe toxic symptoms in a patient who shows severe nausea and vomiting on ingestion of the drugs in reasonable dosage.

Nervous symptoms—In animal experiments with high dosage there is a phase of excitation with spasticity, incoordination of movements and convulsion followed by coma and death. In man high dosage causes headache, sleeplessness confusion, incoordination, aches and pains and severe prostration. If the damage proceeds further the most highly developed functions get deranged and the patient becomes positively 'mental'. In cases when the poisoning is slow, destruction proceeds slowly and we get signs of poly- and optic neuritis and atrophy. Cases of encephalomyelitis have also been recorded.

Circulatory symptoms—The most dangerous and fatal but very rare toxic effects of sulphonamides belong to this system. Hæmolytic anæmia and agranulocytosis have a mortality of 50% and more. Mild anæmia and leucopenia develop in most of the cases but when high dosage are given specially to children jaundice, hepatitis and hæmolytic anæmia may come suddenly within 5 days and may be associated with severe dermatitis showing wholesale damage to devitalized and avitaminosed tissues.

In this condition RBC and Hb go down rapidly while polymorphs go up tremendously (20,000 to 87,000). This is a crisis in red cell portion of the blood. Similarly a crisis could also occur in WBC's which results due to prolonged heavy dosage of about 50 gms. in 18 to 20 days. Death in such cases is supposed to be due to absence of granulocytes but Dameshek and Wolfson (1942) have successfully treated with sulphathiazole two cases of agranulocytosis caused by ingestion of amidopyrine. They believe that death is not due to the lack of neutrophils but to the resultant sepsis which could be eliminated by sulphonamides even in the total absence of granulocytes and even when transfusion of blood, liver and pentanucleotide therapy have failed. The blood findings of their cases are interesting. There were no granulocytes in both, and WBC's were 750 in one and 500 in the other. They gave 2 gm. of sulphathiazole initially followed by 1 gm. 4 hourly and found that after 40 hours WBC's went up to 1400 and 2700 and 4 granulocytes appeared in the first case. Both the patients recovered in time. If their observations could be proved to be true by other workers as well suphonamides would soon be considered as life saving remedies in this condition too with a demand for their inclusion in the treatment of agranulocytosis rather than their exclusion or stoppage as the contra-indicated drugs.

Auto-hemagglutination—The agglutination of a patient's RBC's by his own plasma or serum is a rare phenomenon. It is most commonly seen in trypanosomiasis. Levine and Katzin (1938) found an abnormal agglutinin in a patient's RBC's after sulphonamide. Scott and Meerapfel (1939) definitely noted it after sulphanilamide. In India, Parekh (1943) reported a case after sulphapyridine. As the phenomenon is generally well marked in hæmolytic icterus and anæmias and sulphonamides do cause these conditions, its appearance as one of the toxic effects of the drugs is not very surprising However, the clinical importance of its detection in a sulphonamized patient may lie in its giving a warning to the attending physician that the drug is causing dangerous hæmolysis. It also makes the making of the blood films and counts almost impossible. The

mechanism of its production is not known but possibly the inoculation into a patient's system of the products of disintegration of erythrocytes and infective organisms caused by sulphonamides may make the patient's plasma agglutinate his own RBC's. It is fortunate that this occurs at below normal body temperature otherwise it would be incompatible with life and prove fatal in a moment. Auto-agglutination may in time arouse considerable interest amongst the worker in India and the Far East as according to John Lowe (1944) it has been claimed that this phenomenon occurs very frequently in cases of malaria.

Cyanosis—This is the commonest symptom following sulphonamide therapy but is probably not of toxic origin. It demands no treatment and has no clinical significance. It appears that it is due to coloured derivatives of sulphanilamides produced in the body. Another view of its causation is the production of methemoglobinemia which is supposed to be corrected by giving 1 gm of methylene blue every four hours. Yet another view is there which has made us unnecessarily restrict sulphur-containing drugs and diets to the patient receiving sulphonamides. It needs some explanation and an overdue correction which deserves to be widely known to our general practitioners.

Sulphonamides and sulphur-containing drugs and diets—There are still some who prohibit ingestion of sulphur-containing drugs and diets to their sulphonamized patients. The idea is that all ingested sulphur turns into hydrogen sulphide which in the presence of sulphonamides combines with hæmoglobin and forms sulphæmoglobinemia which produces cyanosis. This has been proved to be not true. The most convincing proof of all is furnished by Ridley Smith (1941) who noted no effect on his 30 recorded and many more unrecorded cases who received Mag. Sulph and Pentothal Sodium (an intravenous anæsthesia containing 12% sulphur) along with sulphapyridine. One of his cases received 1·75 gm. of pentothal *i.e.* 3 grs. of sulphur direct into the veins and within half hour 15 grs of sulphapyridine intravenously without any untoward symptoms. Ridley Smith rightly concludes that 'such a concentration of sulphur in blood would surely never be reached by a diet containing eggs and onions'. There appears to be no justification, therefore, to stick to a wrong idea and exclude such useful articles of diet as eggs from a patient's dietary during sulphonamization.

Cutaneous symptoms—Sensitization to the drug appears to develop after 8 to 10 days. The exact causation is not known but it may be that sulphonamides are simple photo-sensitizers like other aniline dyes. The skin and associated conditions due to sulphonamide poisoning show a striking resemblance to the symptoms of avitaminosis of B-complex such as seen in beri-beri and pellagra. Pellagrins show dermatitis of exposed parts and pressure points plus increased porphyrinuria amenable to nicotinic therapy. So do the patients taking sulphonamides. Hallam (1939) warns against the use of ultra-violet rays along with the drugs. I had given mild tonic dosage of U.V. rays to patients taking the drug without any ill effects while a strong dose given for adenitis to a patient taking the drug caused severe itching and rashes proving that it was not the rays but the trauma caused by them that acts. Pellagrins having corroporphyrin 1 which is supposed to be a photo-sensitiser get dermatitis on covered parts which are not exposed to lights but are subject to constant friction (Ahmed 1943). Park and Platts (1942) working in Egypt also noted in their 27 patients that pressure points and covered parts were also affected though not so much as the exposed ones. It all means that skin gets sensitive to trauma whether it is actinic, thermal or mechanical. There is another possibility and the present writer believes that the skin eruption, at least to a certain extent, may be due to simple mechanical irritation caused by insoluble acetylated salts of sulphonamides in the process of excretion through the skin and the light friction and dermal infection may simply be the exaggerating causes of the trouble. This is supported by:—

(1) The known effects of mechanical injury in the process of excretion of acetylamides on the renal and ureteral regions and the time of occurrence of dermal and renal complications which are almost the same.

(2) The fact that dermal lesions are most likely to appear when excretion of the drugs in the urine is found to be depressed and are known to occur more when sulphathiazole and sulphadiazine are given the acetyl salts of which are more insoluble than those of the others.

Renal symptoms—The drug after absorption is excreted partly as it is and partly after conjugation in the liver as acetyl salts in acid medium. The crystals are sharp, pointed, friable and arranged in bundles. Hæmaturia is caused by mechanical injury produced by them and when clots are formed renal colic may develop without any signs of uroliths. Anuria is caused by blockage of ureters specially at their vesical ends. These concretions are radio-transparent and cannot be detected on x-ray. They are soft and friable and could be broken with the end of a ureteral catheter and washed out or redissolved in an alkaline lotion. Caplon and Dunkerley (1944) treated 1800 cases of pneumonia with M & B 693 in Kolar goldfields, Mysore, with an average dose of 6 gm. a day and found eight cases (0·45%) of gross hæmaturia and 2 of anuria (0·11%). Their two anuria cases received 12 gm. and 15 gm. in 48 and 72 hours while out of 5 cases of anuria of Waterston and Doharty (1943) two received 22 gm. in 40 hours and the other two got 26 and 25 gm. in 3 or 4 days and the 5th case got 41 gm. in 7 days, showing that while high dosage may increase the incidence of anuria, cases receiving the usual 6 gm. dose for even 2 days may get this complication suddenly without any warning. As mentioned before papillitis and pyelitis with severe tubular degeneration have also been noted in human beings though there is as yet no evidence of blockage of renal tubules with acetyl crystals of sulphonamides.

Drug fever—About a week after the commencement of the treatment when the temparature due to original infection is either normal or declining a sharp rise of this fever sets in. It is also noted after re-administration of the drug. It is usually accompanied

by drug rash and other anaphylactoid reactions and thus appears to be allergic in nature. It is a sign of great value for it often heralds the impending danger of some of the most troublesome and fatal toxic reactions namely hæmolytic anæmia, agranulocytosis and exfloliative dermatitis. To distinguish from a recrudescence of original infection the treatment should be suspended and if fever comes down to normal 5 grs. of sulphonamide may be given when a sharp rise of the temperature within 12 hours would generally prove the existence of the drug fever.

Resemblance of Sulphonamide Toxicity with Pellagrinoid Syndrome

Common symptoms of the deficiencies of pellagra-preventing factor in B_2 complex have long been expressed by 3 D's—diarrhœa, dementia and dermatitis to which a 4th D (blood) dyscrasia has recently been added. Porphyrinuria, sensitization of the skin against light and trauma and a state of allergy also exist. Pathologically the pellagrinoid lesions are degenerative rather than inflammatory in type, and get dramatically cured with nicotinic acid therapy. As nicotinic acid deficiency is always associated with that of other members of vitamin B-group, peripheral neuritis and symptoms of the deficiency of other vitamins also co-exist. Toxic effects of sulphonamides with the exception of acetyl-salts injury are precisely akin to this avitaminosis of B-group and yield dramatically to nicotinic acid and other vitamins as noted by the present writer and many other workers in America and other countries.

Role of Nicotinic Acid Therapy in Sulphonamide Poisoning

The present writer believes that nicotinic acid could play a very significant role in the prevention and cure of toxic effects of sulphonamides with the possible exception of obstructive and mechanical type of renal complications. Even hæmolytic anæmia and agranulocytosis, rare as they are, may be prevented altogether and possibly cured in increasing number when they do occur. The great hæmopoietic action of nicotinic acid in resistant type of macrocytic anæmias and the dramatic effects in mental states and gastrointestinal troubles and its desensitizing properties which allow the skin to resist actinic and other traumas could all prove to be of great benefit against sulphonamide poisoning. Moreover, it has been observed that synthesis of B_2 factors in animals takes place in their intestines and when the experimental animals receive sulphaguanidine and succinyl sulphathiazole which are not absorbed from their intestine but which completely sterilise their guts they show symptoms of vitamin B_2 deficiency. This intestinal synthesis of B_2 factors has not been known to occur in man but through the study of the nature of damage due to sulphonamide which is similar to the vitamin B_2 deficiency we get an indirect proof that this synthesis may be taking place in men as well and sulphonamides by interfering with it may be producing the deficiency syndrome. The present writer gives nicotinic acid and sulphonamides together as a routine and has noted no antagonism in the actions of the two drugs. Sulphonamides prevent the activity of the causative organism as usual and nicotinic acid helps to prevent the toxicity of the sulphonamides. The explanation appears to be that as sulphonamides cause degenerative type of damage mostly to the epithelial tissues and nicotinic acid is essential for their health and vitality sulphonamides would exhibit poisoning effects more readily in patients having nicotinic acid deficiency and its adequate supply to the body should enable the tissues to resist these toxic reactions more effectively than is possible otherwise. All this ultimately goes to prove the absolute necessity of an adequate supply of nicotinic acid and other vitamins to prevent and cure sulphonamide damage to the human tissues. However, to form a true estimate of the value of the nicotinic acid therapy we must clearly understand and keep in mind the above mentioned observations so that a rational use of it may be made.

Prevention of the toxic effects of the Sulphonamides—The first point in the treatment of the toxic effects that we are generally taught is to stop the drug at once but if we are making a discriminate use of it we cannot afford to do so. However, if we persist in its use, inspite of the danger signal, we may come to grief. The only thing open to us then is to learn the ways and means of preventing them and to utilise our knowledge as a routine in every case. An endeavour is made below to help the general practitioners to achieve this object.

We have seen that the extent of the damage to the tissues generally depends on the degree and extent of the concentration of the drug and the rate and conditions of its excretion through the renal and cutaneous systems and the state of health and nourishment, generally, of the epithelial cells of the body. A rational use of a particular member of sulphonamide group, therefore, cannot be made without knowing, at least, some of the most essential points of its pharmacology.

Essential points in the Pharmacology of Sulphonamides—(1) Absorption from the gut of practically all the drugs of the group except sulphaguanidine takes about 4 hours and the excretion in free and conjugated form (acetyl salts) within 24 to 48 hours. (2) Conjugation of the drug takes place in the liver and the acetyl salts are produced which have no effect on micro-organisms but being sharp-pointed, thin and arranged in bundles may injure the renal system, causing hæmaturia or actually block ureters if they are in too concentrated a form. They are friable and get easily dissolved in an alkaline media. In case of defective renal excretion they get excreted more through the skin and may cause irritation giving rashes, eruptions or actual dermatitis. (3) After absorption the drug distributes itself through the body by simple diffusion and follows closely the water contents of the various organs. It is found in blood, lymph, chyle, saliva, bile, pancreatic juice, cerebro-spinal fluid, milk, amniotic fluid, fœtal blood, sweat, urine and other secretions and excretions. It is, thus, capable of causing abortion and damage to a fœtus or suckling babe. Abortions in rabbits are on record and Melton (1944) recently reported abortion

in a case in which sulpha-mezathine was given for pneumonia, 4 gm. initially and then 2 gm. 6 hourly. (4) When the drug is given in the way we do in 4-hourly doses, the equilibrium between absorption and excretion takes about 3 days to be established and elimination is also completed in the same period after the cessation of the treatment. We, thus, have full 3 days in the beginning for prevention of toxic effects and have to combat them for 3 days after stopping the drug if they do appear in spite of our care and caution. (5) The concentration of the drug in cerebro-spinal fluid is always less than that in the blood and therefore we have to use higher doses in nervous affections. When renal functions are impaired and excretion is thus hindered, the equilibrium gets disturbed and we must give smaller doses to produce the desired strength in the blood and other body fluids. Sulphaganidine remains practically confined in the lumen of the bowels and could thus very powerfully act on the harmful organisms living in the guts without giving the toxic effects but renal complications are apt to occur more with this drug. (6) Every member of the group has a selective action on one or several groups of the infective bacteria allowing a choice to be made by us for their selective activities.

General Rules for Prevention of Toxic Reactions—We can now set down the general rules that we may follow as a routine. They are:—(1) choice of the drug and its administration to suit the patient and his infection, (2) supply of plenty of fluids to combat dehydration, help distribution, avoid irritation and facilitate safe excretion of the drug, (3) prescribing glucose and alkalies to fight acidosis, to maintain desired pH of the fluids and to keep acetyl salts in solution for avoiding damage to renal and cutaneous systems and (4) supplying extra digestible proteins of high caloric value and vitamins, specially nicotinic acid, along with other vitamin B-group and vitamin C to make good their deficiencies and thus restore cell-vitality and to give extra nourishment to the tissues to resist irritation and degeneration and to repair the damage wherever it is caused. Practical points on these 4 fundamentals will be found in the following lines.

Choice of Sulphonamides—There are five members of the group which at present, are in common use amongst the general practitioners in India. They are: (1) Sulphonamide and its compound like prontosil, septanilam, pro- and solu-septasin, sulfanil, sulphonal, streptocid, septamide, sulphonamide, sulpocil, nicosil, and other similar names. (2) Sulphapyridine or M. & B. 693. (3) Sulphathiazole, Cibazole and others. (4) Sulphadiazine. (5) Sulphaguanidine.

Other members are also pouring in into the market but are not in common use. Sulphanilamides are used specially for strepto, sulphadiazine for staphylo, sulphaguanidine for action on bacteria in the lumen of the gut, such as of dysentery and cholera. M. & B. 693 is the drug of highest toxicity and intolerance and is used specially for pneumonia and meningitis. Sulphathiazole has a wide application. It could be efficiently used in place of M. & B. 693 for pneumonia and meningitis and is supposed to be a better drug because of its uniform absorption, rapid excretion, moderate rate of conjugation and slow toxicity. For B. coli and gonococcus it shares equal status with sulphathiazine. For lympho-granuloma venereum it is the only effective sulphonamide. Then acetyl crystals of sulphathiazole are less soluble than those of other members and thus more liable to cause renal damage and ureteral blockage and we should guard against its use where previous renal damage is feared or skin is oversensitive and shows urticaria or such other signs. Sulphaguanidine is the least toxic of all but very high renal reactions are noted with it, in spite of patients receiving sufficient quantity of fluid, the cause of which is hard to explain. Moreover a marked degree of vitamin B_2 deficiency, has to be over-corrected when the drug is used for dysentery and diarrhœa. It is well-known that avitaminosis produces intractable diarrhœa and signs of colitis and to treat such a condition with sulphaguanidine would mean inviting a disaster. Smilarly, where gastric irritation already exists some member of the group other than M. & B. 693 should be selected. We, thus, find that by proper and intelligent selection of the drug we can reduce severe toxic reactions.

Supply of fluids—Enough fluid to maintain a flow of 50 to 70 ozs. of urine is required. 5 to 7 pints of fluid in 24 hours should be given according to the requirements of a particular case and the patient may be guarded against all the acts that may increase dehydration.

Supply of alkalies—Enough alkalies in the shape of bicarbonates may be given to make the urine alkaline. To keep the acetyl salts in solution, urine has to be kept at 7·5 pH and this could be done by giving 10 to 20 gm. bicarbonates daily. Crystalluria occurs with sulphathiazole and -diazine if pH of urine falls below 7·5. No alkalosis has been noticed with such heavy doses but we must guard against it if its presence already exists.

Supply of extra vitamins and proteins—Nicotinic acid, thiamin, whole-yeast, liver extract and vitamin C in the shape of orange or lime juice should all be given. Vitamin C up to 500 units and nicotinic acid up to 600 mgm. daily for first 3 days and then lesser quantities may be prescribed. Egg-albumin of 4 to 6 eggs a day dissolved in water not only supplies the required protein but makes a good suspension fluid for the drug. I use pelonin (Glaxo), 50 mgm. (Nicotinic acid) and 6½ gr. yeast tablets.

A workable formula to prevent toxic effects—For a severe case of straight-forward nature the daily routine for the first 3 days may be:—Drug at 5-30 and 9 a.m. and 1, 5 and 9 p.m.

Rest—uninterrupted for 5 hours from midnight to 5 a.m. Fluids—6 pints or more including plain water, orange juice, liver soup and albumin water.

Water and Alkalies—Plain water with desired amount of bicarbonate of soda dissolved in it may be given in between the drug time, say, at 7 and 11 a.m. and 3, 7 and 11 p.m.

Liver soup, albumin water, orange juice and glucose—Soup of ½ to one pound of fresh liver, juice of

4 to 6 oranges or 300 units of vitamin C, white of 4 to 6 eggs prepared fresh should be given as feeds an hour before giving the doses of the drug. Glucose and orange juice could best be given in aerated form like ordinary lemonade.

Nicotinic Acid—2 tablets of 50 mgm. to be given 20 minutes before every dose of the drug. After the first 3 days or in less severe and simple cases from the very start this routine may be varied according to the requirements of an individual case. This routine provides a patient along with his drug the adequate quantities of fluids, alkalies, vitamins, whole liver, glucose and protein of high caloric value. If this routine could be followed at least in our hospitals the number of severe toxic reactions would be reduced very considerably.

Treatment of Toxic Effects

To have a clear idea of the existence of various toxic reactions and to be able to predict or spot them in the early stages mean 80 per cent of the treatment. The rest may be described briefly for the sake of recapitulation :—

(1) *Nausea and vomiting*—Give the drug suspended in mucilage. Avoid use of M. & B. 693. Give sulphadiazine instead. Use vitamin C and nicotinic acid 20 to 30 mgms. before each dose and give aerated glucose-lemonade containing 20 grains of soda bicarb as a vehicle for taking the drug in. If nothing succeeds employ one of the injectable forms of the drugs and keep a careful watch for toxic effects.

(2) *Cyanosis*—This calls for no special treatment but about 15 gr. or 10 c.c. of 1 per cent methylene blue intravenously or 100 mgm. of nicotinic acid every 4 hours for a few doses helps to get rid of the unsightly hue. Markoff (1943) found nicotinic acid very efficient for this purpose. I found its marvellous effect in one of my acute cases. (*Case 3*).

(3) *Mental symptoms*—400 to 600 mgm. of nicotinic acid a day with glucose and albumin water admirably clears up the mental state.

(4) *Peripheral neuritis*—Nicotinic acid with thiamin and liver extract prove successful.

(5) *Optic neuritis*—Nicotinic acid acts wonderfully and may save total blindness. Sulphonamides must be stopped and nicotinic acid 100 mg. in 25 c.c. of 25 per cent glucose may be given per vein daily for a week and then twice a week, with medicinal yeast in dr. doses by mouth. A case of optic atrophy of sulphonamide origin with loss of sight was treated on my suggestion with nicotinic acid with complete restoration of sight while Hollis and Betty of New England report a case (1944) of optic atrophy due to sulphathiazole poisoning which resulted in complete blindness in an infant. Nicotinic acid was apparently not used by them as a preventive or curative agent for the case. No time should be lost in such cases and nicotinic acid should be given as early as possible as the case of 4 months standing was treated without success and was labelled as 'too late'.

(6) *Jaundice and low hæmoglobin*—When icterus develops Hb per cent must be measured and if it is found low it calls for watchfulness as it may result in hæmolytic anæmia. Nicotinic acid and liver extract intravenously in big doses should be tried and if the Hb per cent continues falling blood transfusion should be arranged specially when the signs of dermatitis and drug fever is associated with it.

(7) *Hæmolytic anæmia*—This may come on as early as 5th or 6th day of the treatment. Sulphonamide must be stopped at once. Blood transfusion given. Nicotinic acid 100 mgm. in 25 per cent glucose 50 c.c., Hepatex 10 c.c. with vitamin C 200 mgm. made up with a pint of saline may be given continuously. It is a very fatal condition but does yield to timely control.

(8) *Skin conditions*—If mild they yield to cal. lactate and adrenalin; when severe nicotinic, riboflavin, vitamin C and ephedrine internally and calamine lotion locally with stoppage of the drug meet the situation.

(9) *Leucopenia and agranulocytosis*—Progressive leucopenia should be watched and treated with nicotinic, liver extracts and nucleic acid given parenterally. When agranulocytosis occurs the prognosis is grave but energetic treatment with blood transfusions, intravenous nicotinic and liver extracts and pentanucleotide 40 c.c. daily for 3 days may save life. This condition is so rare but so well-known that one should be careful not to develop phobia for it and thus lose the benefit of the right kind of sulphonamides for the fear of it.

(10) *Renal complications*—Crystalluria, hæmaturia, oliguria and renal colic due to clot formation without litholiths in the ureters or pains in both loins and hypogastrium of full nature show acetyl salts injury. More than 5 pints of water and 90 grs. of sodii bicarb a day with diathermy to the loins and hypogastrium should be given. If urine output becomes 300 c.c. or less a day sulphonamide should be withheld and energetic treatment instituted. Continue giving alkalies to bring pH of urine to 7·5 or up, plenty of water by mouth and glucose saline intravenously. Give diathermy 30 minutes per seance twice a day. Caplam and Dunkerley recommend 300 c.c. of 4·28 per cent sodii-sulph. in triple distilled sterile water by intravenous drip and nikethamide 1·7 c.c. subcutaneously with intranasal oxygen if dyspnœa and cyanosis develop. In case of anuria, massage ureters per rectum and kidney regions and give short-wave therapy. If this fails the obstruction of lower parts of ureters near the vesical orifices are generally found—lavage of ureters with alkaline carbonate by cystoscopic uretral cathetrization generally breaks, dissolves and removes the obstruction and saves life. When this also fails pyelotomy with retrograde catheterization may be tried. Decapsulation has also been done but these procedures are too specialised for general practitioners.

Sulphonamides with other Drugs and Therapy

Sulphonamides have almost specific actions in indicated cases and are generally given alone but there appears to be no reason why certain suitable drugs

should not be prescribed with them if absolutely necessary. However drugs and therapies which are likely to enhance toxic effects should be withheld. Some of them are:—

(1) *Photo-sensitizers*—Like aniline dyes, chlorophyll preparations, halogen group of drugs and fluorescent substances.

(2) *Drugs causing leucopenia*—Like phenacetin, quinine, organic arsenic and certain gold salts.

(3) *Therapies*—Those causing tissue destruction like ultra-violet rays and x-rays in fairly high doses. The question of quinine needs special mention.

Sulphonamides and quinine—Malaria is the commonest disease in India and its association with diseases needing sulphonamides is possible and if a slide if found positive in a severe lobar pneumonia case there is no escape but to give the two drugs together watching the progress carefully. Harver and Cole observe that in rats quinine increases the absorption of sulphapyridine by 44 per cent and corresponding rise occur in the amount of acetyl salts. This suggests an increase in liabilities of renal and other toxic complications. Niblock (1943) has actually observed increased vomiting and slow recovery in 6 of his cases getting the 2 drugs. I have recently noticed several cases in which the 2 drugs given together or one after the other, have cased very troublesome reactions, unbearable discomfort, intense prostration and very protracted convalescence. Quinine is a known gastric irritant, produces leucopenia, causes severe mental confusion, damages the nerves and gives optic atrophy. As a fairly careful examination of a thick slide prepared with modern stains could definitely exclude malaria there appears to be no justification for the use of the two drugs together for influenzas, colds, and other such maladies or on mere suspicion of malaria co-existing with other diseases specially when there is such a shortage of quinine and troublesome toxic reactions are likely to occur with it.

Re-administration of Sulphonamides

Patterson reports two definite cases in which readministration of the drug in even very small quantity produced severe toxic reactions with acute illness, high fever, vomiting, profuse perspiration, chills, headache, abdominal and generalized pain which soon disappeared on stopping the drug. The first treatment appear to sensitize the patient while the re-administration brings about the troublesome reactions. In their first case a 13 year old girl received sulphathiazole 2 gms. a day for 12 days without any toxic effects but when after 3 days she received only 2 gms. in 8 hours a severe reaction was produced. In the second case the reaction came on readministration of the drug after 5 months. Many other cases of this nature have also been reported and the points should be kept in mind.

I fully realise that actual citing of typical cases helps the practitioners more than any description of a recommended procedure but to economise in space only a few illustrative cases are given below for their general interest.

Case Reports

Case 1—Nicosil and quinine—A 50 year old man had rigor and high fever on 18-7-44. He was given an alkaline mixture and 15 grs. of quinine bihydrochlor a day for 4 days and then 10 grs. a day for another 5 days upto 27-7-44. He felt feverish again on 1-8-44 and got a temperature 104°F with running from the nose and pain all over the body and severe constipation by 3-8-44. He was again given an alkaline and salicylate mixture and then Nicosil 3 tablets a day. On 4th and 5th temperature came down to normal but the patient felt very weak and prostrated. He became very pale and anæmic, had headache and backache, got very restless and had complete insomnia and became positively mental. His weakness was so great that he could not hold a tumbler in his hand. He felt an unexplained internal discomfort. On 5-8-44 I saw the case and found another 12 quinine tablets lying with him for use. His blood was not examined before. I took a slide and found it negative for M.P. Quinine and Nicosil was stopped and he was given 600 mgms. of nicotinic acid a day with plenty of fluids and nutritive high protein diet. His convalescence was very protracted. He was not able to write a note to his office even after 5 days and was just able to walk about in his verandah after 8 days. He told me that Nicosil and quinine was also given a month ago to one of his relations who is a retired high official who also had such a bad reaction that he was even ready to get his will dictated. The attending doctor told me that he had been giving this combination of drug for his influenza cases for sometime and was puzzled at very severe actions but was unaware that quinine and sulphonamides when given together may cause them. He recollected more than a dozen cases of this nature and showed me another case who received quinine and sulphonamide and developed severe itchings and intractable form of urticaria with weakness, anæmia, extreme prostration and complete insomnia for nights and days. I suggested nicotinic acid and other adjuncts to the treatment which relieved the symptoms in a few days.

Case 2—Intolerance of M. & B. 693 in pneumonia controlled with nicotinic acid—A 40 year old man in a very run down condition was admitted in a hospital with right lung pneumonia. He was given ½ grm. 4 hourly M. & B. 693. He felt nausea and vomiting and could not retain the drug. He developed jaundice on 3rd day. The drug was stopped. His temperature again shot up to 104°F and his left lung was also involved. The case came under my care. He was delirious. I gave him 100 mgm. of nicotinic acid with 300 mgm. of vitamin C in 50 c.c. of 25 per cent glucose and plenty of glucose and orange juice put up in ærated bottle. After 6 hours 100 mgm. of nicotinic acid by mouth and 20 minutes after I gave half gm. M. & B. 693 suspended in albumin water. He tolerated it and the usual treatment was then completed with success.

Case 3—Acute M. & B. 693 poisoning treated with Nicotinic acid—A 26 year old married lady was given two tablets every 2 hours and after 6 tablets showed symptoms of acute poisoning. She felt nausea

and giddiness and became unconscious. She turned blue, respiration laboured, pulse irregular and saliva flowed from the mouth. On coming round had severe epigastric pain, nausea, headache, giddiness and uncontrollable sinking sensation. She was given 50 mgm. of nicotinic acid in 20 c.c. of 25 per cent glucose I.V. The cyanosis disappeared within 15 minutes, nausea, giddiness and headache decreased and the sinking feeling was gone altogether. She was relieved of all symptoms within an hour except headache which lasted 24 hours.

Case 4—Optic atrophy with total blindness due to M. & B. 693 treated with nicotinic acid—A girl aged 8 years having resistant mastoid sinus got 3 tablets of M. & B. 693 and local dressings of sulphonamide for a month. Sinus did not heal but she suddenly lost her sight. One opthalmologist declared her incurable the other found optic atrophy and gave acetyl-choline and other usual treatment without success. On my suggestion she was given nicotinic acid 50 mgms. I.M. on alternate days for 25 days together with 100 mgm. orally for 38 days. The result was marvellous. P.L. & P.R. were restored in 8 days, she could walk about easily in about a month and her optic disc was normal with vision 6|12 in both eyes in 6 weeks.

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CASE NOTES

SPINAL CARIES SIMULATING PSEUDOHYPERTROPHIC MUSCULAR DYSTROPHY

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N. M., 3 years, Muslim male child, was admitted into the hospital with the complaints of:—difficulty in standing up from the lying posture, duration 2 months; gradual prominence of the abdomen, duration 2 months. The onset was gradual. The difficulty in standing up was most marked after a sleep.

Physical examination—The child was healthy to look at. His temperature was 98°F., pulse and respiration rates were 80 and 20 per minute respectively. The child was not so sprightly on his feet as usual. He was unable to mount stairs without help. The gait was slow and rocking. There was no hypertrophy or atrophy of any of the muscles nor was there any fascicular quivering. While standing he stood on a broad base and the upper part of the trunk was thrown back so that a plumb line from the vertebra prominens fell far behind the sternum. There was well-marked lumbar lordosis becoming very prominent on standing and disappearing on lying down. There was slight kyphosis of the lower thoracic spine. The child rose from the supine to the erect position in the manner described as 'climbing up the thigh'. Abdominal reflex was present in all the quadrants. Knee and ankle jerks were slightly exaggerated on both the sides. Sensations could not be tested. Babinski's sign was extensor on both the sides. The sphincteric control was intact. Other systems revealed no abnormality. Faradic and Galvanic excitabilities were diminished in the muscles of the pelvic girdle and lower extremities.

Comments—The clinical features closely simulated those of pseudo-hypertrophic muscular dystrophy. The case was labelled as one of an early case of pseudo-hypertrophic muscular dystrophy. Absence of hypertrophy of any of the muscles was not a point against this diagnosis as in the early stage of the disease hypertrophy may not be present. Spinal kyphosis also did not stand against the diagnosis as it is found in muscular dystrophy of this type.* Exaggerated jerks and extensor

*The author does not mention whether there was any localisd tenderness over the lower thoracic spine associated with spinal rigidity—ED.

plantar response made me take a skiagram of the spine which showed spinal caries of the 11th and 12th dorsal spines. The x-ray finding changed the diagnosis to that of spinal caries. The signs presented by the case were due to compression paraplegia in which the muscular weakness was such as to mimic muscular dystrophy.

Evidently, the case was interesting from the clinical point of view. Such a case was considered unusual enough to warrant publication.

Acknowledgments—My thanks are due to Major-General H. C. Buckley, I.M.S., Principal, Medical College, and Superintendent, Thomson Hospital, Agra, for his kind permission to report the case. I must thank Dr. S. C. Misra, Professor of Surgery and Dr. R. V. Singh, Resident Surgeon, Medical College, Agra, for their kindness in examining the case.

A CASE OF UNUSUALLY LOW BLOOD SUGAR

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In the course of the routine examination of blood for biochemical constituents, in the investigation of the sick destitutes of this hospital, there occurred a case of exceptionally low blood sugar, a parallel of which, the author has neither met with either in practice or in reference. It is, therefore, considered necessary to record this case for publication, so that it may arouse a healthy criticism amongst workers in the line.

Mr. A. R., Muslim male, about 20 years of age, was brought by ambulance on 17-7-44 from a destitute centre for admission in this hospital for the treatment of the complaints:—(1) frequent loose motions with mucus, (2) weakness, (3) emaciation, (4) painful gum and left cheek, and (5) high temperature with rigor and chill. Thermometer recorded only 98·4°F. at the time of admission.

He had no previous history of suffering from any prolonged diseases except occasional attacks of fever with rigor and chill.

History of present illness dates back to about 6 months. Temperature now and then with rigor and chill, slight cough with expectoration with no history of hæmoptysis and occasional loose motions were the prominent symptoms that deserve mention. He did not have sufficient food and was in a condition of semi-starvation for last three months. He developed œdema feet about two months before admission, but this had disappeared at the time of admission.

Examination of the patient after admission revealed the following: He was a medium-built man with no apparent defect of development. Run down, emaciated, anæmic and pale as he was in appearance, he was too weak to move freely. He was mentally sound and possessed average intelligence. He was a cultivator by occupation before famine had overtaken him. *Alimentary system*—Tongue moist and coated. Gum red and painful, left cheek red, œdematous and painful. Tenderness in the right hypochondriac region, liver not palpable. No jaundice. Appetite present. No vomiting or nausea. Loose motions 8 to 10 times a day, not much griping. Abdomen distended with gas, no accumulation of fluid in the peritoneal cavity. Colon thickened and tender. *Circulatory system*—Nothing abnormal except feeble 1st sound of a rapidly beating heart—120 per minute. Blood pressure was low. Spleen 2 fingers. *Respiratory system*—Respiration hurried, 30 per minute. Rhonchi scattered throughout right lung. Other systems—Nothing noteworthy.

Laboratory examinations—Blood—Hb. 35 per cent (Tallqvist); R.B.C. 1,360,000 per c.mm. W.B.C. 3,600 per c.mm.; Neurophils 59 per cent, Lymphocyte 40 per cent, Monocyte 1 per cent.

Biochemical examination—Blood sugar 17·6 mg. per 100 c.c., N.P.N. 50·4 mg., creatinine 1·6 mg., uric acid 2·7 mg., chloride 469·2 mg. per 100 c.c. Total plasma protein 7·4 per cent, albumin 3·8 per cent, globulin including fibrinogen 3·6 gm. per 100 c.c.

Examination of urine showed trace of albumin and a few pus cells. Examination of stool revealed ova of ankylostoma duodenale in fair number and presence of occult blood.

While in the hospital, the left cheek became more painful, red and œdematous and there formed an ulcer (cancrum oris) with foul smell and slough. Temperature however, did not rise more than 99°F.

He was kept on ferrous sulph. tablet 2 gr. each t.d.s., mist kaolin oz. 1 t.d.s., sulphanilamide tablet one at a time t.d.s., lotio pot. permanganate for gargle and boroglycerin to touch inside the cheek. He was also given subcutaneous saline. Diet was barley water.

Inspite of all these being done for him, he ultimately succumbed on 19-7-44 at about 8 a.m. His death was not characterised by any typical group of symptoms and he died of heart failure as a result of prolonged malnutrition leading to the degeneration of the myocardium, to which were added the ravages of diseases like colitis and sepsis. Post mortem examination was however not possible for some technical reasons.

The clinical and laboratory findings and the course of the disease culminating in death are nothing conspicuous except the figure for blood sugar and non-protein nitrogen. Rise in N.P.N. was evidently a premortem one. Blood sugar 17·6 mg. per 100 c.c. is certainly a very low figure.

It has already been reported that blood sugar was low in 67 per cent of the starvation cases investigated upon in this hospital[1] and the lowest figure obtained there was 20 mg. per 100 c.c. It has further been shown[2] that this low blood sugar was the outcome of prolonged malnutrition and starvation and it is possible for one to have this low blood sugar even without showing any symptoms of hypoglycæmia.

Here, in the case under discussion, the figure for the blood sugar is still lower. The other features associated with this low sugar content of blood are: (1) he died within 48 hours of his blood being examined for biochemical constituents and (2) he had a septic process in the body.

It can therefore be considered as (1) a case of very low blood sugar which gradually came down beyond the

limit of viability and he died in consequence of this, or (2) it may be that the blood sugar was low and this suffered further reduction quantitatively owing to the presence of a septic focus.

As to the contention of the 1st issue, there is nothing in record in regard to the lowest figure for blood sugar compatible with life, in these cases of starvation. As to the 2nd issue, it is known that blood sugar rises in infections, depending more on the character than on the severity of infection, *e.g.*, the almost universal association of pyodermic conditions, specially furunculosis and carbunculosis with hyperglycæmia[3]. Physiologically also it appears quite sound as acute sepsis causes hyperadrenalæmia.

If infection is considered to give rise to hyperglycæmia, then it is difficult to explain the low blood sugar content in the present case. It is possible, in this case, that sepsis was merely an incidental accompaniment; sepsis had no influence on the blood sugar and the blood sugar was iteslf low purely from prolonged starvation.

SUMMARY

1. A case of unusually low blood sugar was met with in the course of routine investigation of the sick destitutes of this hospital.

2. It was not a case of pure starvation but starvation associated with disease.

3. He had in adition a septic process in the body (cancrum oris, left cheek).

4. Blood sugar is known to increase in infection depending more on the character than on the severity.

Acknowledgment—My thanks are due to Dr. N. Ali for his kindly giving me facilities to see the case and to Rai Bahadur Dr. A. R. Majumdar, Superintendent, Campbell Medical School and Hospital, Calcutta, for kind help and permission to report the case.

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ACUTE INTESTINAL OBSTRUCTION DUE TO PELVIC ADHESION

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A Hindu female, Marwarin, 48 years of age, was admitted into the Arrah Sadar Hospital on 31-10-43, at 11-45 p.m., with acute abdominal pain and vomiting of 4 days' duration.

She had been treated outside for several months for flatulent dyspepsia and had, before admission, received several doses of purgatives and sedatives including bromides, atropine, chloretone and even hydrocyanic acid and morphia. All these vigorous attempts had, however, failed to relieve the pain and vomiting.

The abdominal pain, when first noticed, 11 months ago, was mild and colicky in nature lasting for only a few hours and was accompanied with abdominal distension and constipation. This was a constant feature of the pain and it was noticed by the patient that belching out wind or the passage of flatus during these attacks always relieved her considerably. These attacks progressively increased in severity and lasted longer as the months passed till for the last four days the pain was extremely severe and almost continuous.

The vomited matter was odourless and had at first contained bile but on admission she was bringing out frank small intestinal contents.

Her previous history was almost entirely negative. She was married 30 years ago and had become a widow about 8 years afterwards. She had no pregnancies and repeated attempts failed to elicit any symptoms suggestive of past Neisserian infection.

Examination revealed a frail woman in great distress. The vomiting was incessant and she appeared extremely worn out and exhausted.

The abdomen was markedly distended and tympanitic. Bands of intestine were standing out in clear outline with visible peristalsis in ladder pattern. Loud barborygmi could be heard even without the stethoscope. There were no external herniæ in the abdominal wall or the inguinofemoral regions. The conjunctivæ were clear and there was no history of biliary colic or appendicitis. She had never undergone any abdominal operation.

Examination of the chest was negative. The pulse rate on admission was 120 per minute. Resp. 38 per minute. Temp. 99°F. Pelvic examination revealed a fixed retroverted uterus with tenderness in the right vaginal fornix. As there could not be any doubt about the diagnosis of small intestinal obstruction an immediate laparotomy was decided upon and the abdomen was opened at 1-30 a.m.—2 hours after admission—by a right lower paramedian incision under local anæsthesia. Exploration soon revealed dense adhesions in the pelvis. The fundus of the uterus, the ovaries and tubes and a few coils of small intestine were matted together in dense non-vascular pelvic adhesions. These were gently broken down or divided carefully between clamps and the intestines freed. It was now possible to examine the pelvis more thoroughly and it was seen that the entire pelvic contents were matted together in dense adhesions. The rectum was partly kinked and displaced markedly to the left. A flatus tube could however be passed up from the anus. There was no evidence of endometriosis and the dense adhesions, as above-noted, were non-vascular. The sigmoid colon was free from diverticulæ.

The obstruction being completely relieved, the abdomen was closed and the patient, who had an uneventful convalescence, was discharged completely cured 3 weeks after admission.

Discussion—It is well recognized that pelvic adhesions are an important cause of acute or chronic intestinal obstruction. The feature of this case, however, was that the patient was a widow for 22 years, had no pregnancies and there was no history of specific infection, though the last cannot be dismissed as a possible cause. It is to be noted that Neisserian infections often clear up spontaneously without leaving many adhesions and the chronic salpingitis of text-books is usually caused by repeated reinfections.

The usual cause of pelvic adhesions is puerperal or post-abortal infection and as this was not at all in the picture, endometriosis, diverticulitis and tuberculous peritonitis were all considered as possible causes. The general and pelvic peritoneum and the peritoneal surfaces of the intestines were all entirely free from tubercles. There was no evidence of diverticulitis and adhesions as noted already were dense and avascular. Moreover, the uterus, tubes and ovaries were free and the patient was in the climacteric stage.

It is not, therefore, easy to diagnose the cause of chronic pelvic inflammatory disease in this case—though a Neisserian infection appears to be the most likely. Another remarkable feature was that, though the adhesions were dense and evidently chronic, the symptoms were of comparatively recent origin. Again the early symptoms of intestinal obstruction were so mild that though the adhesions wer dense and evidently chronic, the symptoms were of comparatively recent origin. Again the early symptoms of intestinal obstruction were so mild that they were repeatedly mistaken for "dyspepsia", "gastritis" or "colitis". A careful analysis of the history, *e.g.*, the association of "absolute" constipation, vomiting and abdominal distensions with the attacks of pain and the relief on belching out wind or passing flatus"—all these features should have at once directed attention to simple mechanical obstruction in the alimentary canal.

INTESTINAL OBSTRUCTION CAUSED BY IMPACTION OF FAECES

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A male worker, Oriya by caste, aged 38 years was admitted in hospital on 18-10-44 with the following complaints:—

(1) Constipation for 8 to 10 days before admission.

(2) Acute pain in abdomen specially in the upper part.

(3) Constant vomiting. Vomited matter contained undigested food particles mixed with bile and also good number of round worms.

19-10-44—He was given in the morning 2 ozs. of Mag. Sulph. mixed with 10 minims of Oil Chenopodium. But there was no action for the whole day. In the afternoon he was given soap water enema. Only a small lump of very hard stool came out. On the night of the same day he had copious fæcal vomiting after which he felt some relief. No round worms were seen.

20-10-44—He had no trouble for the whole day except that he was having no stool. He was given soap water enema both morning and evening but no result.

21-10-44—He had acute abdominal pain with occassional fœcal vomiting . Large soap water enema was given 3 times, but no result. When the tube was passed about 10 inches in the rectum a hard mass could be felt and the tube could not be passed further.

22-10-44—The symptoms were much aggravated. He was given fomentations and atropine injections. The patient was much prostrated. Pulse became very weak and increased in frequency. There were discomfort, restlessness and tympanitis. He was expecting death every moment.

23-10-44—Condition was almost same. There was no rise of temperature. Pulse rapid.

24-10-44—Condition was almost same throughout the day. But at mid-night his bowel suddenly opened. First of all a black hard lump of stool came out with force and afterwards an enormous amount of semi-liquid stool came out. No round worm seen. He was thereby relieved of all his symptoms.

He was kept in hospital for another two weeks and was discharged on 8-11-44 fully cured. Since then he is working regularly without any further trouble.

The interest of the case lies in the fact that the man had acute symptoms of intestinal obstruction for six days and he recovered practically spontaneously. Owing to the situation of the Tea Estate, it was impossible to remove him to a big hospital and only expectant treatment was given.

(*Continued from p. 219*)

tions every 4th day is recommended. Of internal remedies arsenic is the most efficacious. It should be given in progressively increasing doses to the limits of toleration, as Fowler's or Donovan's solution. Calcium and parathyroid extract may be tried. Warm, mild, antiseptic bath and locally calamine lotion with ichthyol or a bland dusting powder are comfortable. Sulphanilamide group of drugs is being used with success as a local application, or by mouth or by injections. Vitamin B and D in big doses and autohæmotherapy and milk injections may also be tried.

Cheiropompholyx—This is an acute or subacute vesicular or bullous eruption affecting the hands or feet. The eruption is symmetrical, and the skin of the affected areas is not inflamed. Sensation of burning and itching is present, vesicles appear to be deeply seated and are described as having a sago-grain appearance" (MacKenna).

The contents of the vesicles are sticky in nature. Later they may be secondarily affected and form pustules. There is a tendency to relapse.

It may be due to mental shock (MacLeod) or consequent on toxins from some septic focus circulating in the blood. Some authorities regard pompholyx as a form of eczema (Whitfield). Torok has sometimes seen it coincide with menstruation. The French attach importance to dyspepsia.

Remove septic focus, if any. Fungal infection, if any, is to be treated. The writer has had good results with the following treatment:—The nails, if unhealthy, should be removed with curetting of the nail beds and application of Lugol's iodine for 7 days. Potassium permanganate baths and the application of carbol fuchsin paint with acid salicylic 3 per cent are advised. Recurrence may often be checked for a considerable period by a few small doses of x-rays. Hyperidrosis should be treated.

JOURNAL OF THE

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FIVE YEAR PLAN OF POST WAR RECONSTRUCTION IN THE MEDICAL AND PUBLIC HEALTH DEPARTMENT IN THE UNITED PROVINCES

The Government of the United Provinces and the officers concerned must be thanked for their labour and, particularly, for their frank admission that "this plan is based on material already available and does not lay claim to completeness." A detailed review will be found elsewhere in this issue. It is a pity that even during the post war period, the people of the province have to be satisfied with such patch-work improvements in the medical and public health departments.

The health of a community depends on three factors:—(1) standard of living, (2) standard of education, including public health education, and (3) a comprehensive health service for the prevention of disease and for early diagnosis and treatment. Dr. J. B. Grant, lately Director of the All-India Institute of Hygiene and Public Health, said: "The unification of curative and preventive functions under a single administration is essential and has become an axiom in public health". This is particularly so in India, and Major General Sir John Megaw, an Ex-D.G., I.M.S., pointed out that "it is impracticable to draw a sharp line of distinction between medical relief and disease prevention..... There is no reason why the dispensary doctor should not assume responsibility for the general supervision of health of the area in which he works."

The State cannot adequately supply the public health commodity to the population without the amalgamation of the medical and public health departments as they exist now. The amalgamated department should be administered under the Department of Public Health. After the posts and establishments of the Director of Public Health and the Inspector General of Civil Hospitals are amalgamated, the posts of Civil Surgeons may be abolished and the District Medical Officers of Health may be placed in administrative charge of the District Hospitals, Jails, etc. A similar arrangement for the sub-divisional medical and public health work is also possible. Medical practitioners with suitable qualifications and proper training may be appointed, on contract service, under the District and Sub-Divisional Medical Officers of Health to carry on the curative part of the work. The system of appointing honorary medical officers with or without a small monthly allowance must not be continued any longer. The civil appointments of I.M.S. must be stopped and the provincial medical and public health services should be amalgamated and re-organised to suit post-war developments. All officers, whole time or on contract service, should be trained at Government cost and there must be arrangement for compulsory Refresher Courses for the officers concerned.

Post-war reforms must include measures for ensuring that each family or individual shall be under the care of a qualified medical practitioner who shall be concerned not only with the diagnosis and treatment but also with the promotion of health and prevention of disease. This hypothesis rules out the expansion of the so-called indigenous dispensaries in the rural areas. The Indian Medical Association is of considered opinion that the health of the poor inhabitants of the villages must not be entrusted to unqualified untrained and unregistered practitioners. If the Government are really keen to encourage the indigenous systems, they should insist that all students and practitioners of the indigenous systems must be trained in recognised scientific medical institution and should have a registrable medical qualification. In the United Kingdom, homœopathy has been encouraged by a small section of people and homœopathic hospitals have been established, but all doctors attached to these institutions are registered medical practitioners.

According to statistics, there is only one doctor per 14,000 of the population, at present. To improve the situation, it has been suggested that an additional medical college should be established at Cawnpore or Allahabad. This meagre expansion of facilities for medical education will not meet the requirements of the post-war situation. We would, therefore, request the Government of U.P. to establish two additional medical colleges one at Cawnpore and another at Allahabad, as soon as the War is over. We would, further, appeal to the authorities concerned, to create more and more centres of medical education, year after year, until the province is provided, as in England, with one qualified doctor per 1,000 of the population in the rural areas.

As already stated above, the Five-year Plan of Post-War Reconstruction in the Medical and Public Health Departments in the United Provices, is good in its own way. Similar post-war schemes are probably in the course of preparation in other provinces too. But, if each Provincial Government goes its own way, there is likelihood of the problem of public health and medical relief being approached in a piece-meal and lopsided manner.

It is, therefore, highly desirable that all post-war schemes of medical and public health departments should await the establishment of a full-fledged National Government in India. It will be the task of such a Government to base health planning in India on the improvements, already effected or proposed to be effected, in the medical and public health department in all progressive countries.

FAMINE INQUIRY COMMISSION : REPORT ON BENGAL

The Famine Inquiry Commission was appointed under Ordinance No. 28 of 1944 and the first report under the chairmanship of Sir John Woodhead* has seen the light of the day. Those of us who had witnessed the horrors of the famine in Bengal were shocked to find their own countrymen dying of starvation

*Other members: Mr. S. V. Ramamurty, Sir Manilal B. Nanavati, Mr. M. Afzal Husain, Dr. W. R. Aykroyd, Mr. R. A. Gopalswami, Secretary.

in a country which is mainly agricultural. The most recent famines accompanied by high mortality took place in India in 1896-7 and 1899-1900. Thus we see that within a period of another 40 years, in Bengal alone between one and two million people died as a result of famine and outbreaks of epidemic diseases associated with it. In a later report the Commission will deal with the development of agriculture and the raising of standard of nutrition so as to make recurrence of famine impossible. The Famine Commission of 1901, also discussed several points regarding famine diseases and their prevention but could that prevent the huge mortality which followed the last famine in Bengal?

In March[1] 1943 issue we remarked that we would face famine if the food problem was not solved immediately. We also stressed that starvation would bring disease and epidemics would break out. From March 1943 while Commissioners and District Officers of the Presidency, Burdwan, Rajshahi, Dacca and Chittagong divisions were reporting "Rice position very serious", "Rice crisis" and starvation in their areas[2], the Bengal and Central Governments were denying anything of the sort and one responsible member of the Executive Council called them "over-dramatisation". Mr. Amery denied any food shortage in Bengal in the House of Commons. The inevitable famine followed with all its horrors, with bodies lying unclaimed in the pavements of Calcutta[3], skeletons searching for food in filthy dustbins, and hundreds of men, women, children running to and fro crying piteously for food. Hunger drove men and women out of their hearth and home, dying children were left by the village path to die unattended and unfed; mass migration from villages to nearby towns followed and in their wake followed epidemic diseases and pestilence, to add to the total mortality of the famine. What was the cause of this social wrong and catastrophe in the midst of World War II, when India was fighting in the African Deserts as an ally of the United Nations to efface from the earth cruelty, brutality and inequity of Nazism? The grim realities of the tragedy have now been unfolded in the pages of the report. The Commission arrived at the following conclusions about the causes of the Bengal famine[4]:—

1. During 1943, there was a serious shortage in the total supply of rice available for consumption in Bengal as compared with the total supply normally available. This was due to (*a*) a shortage in the yield of the winter rice crop (*aman*) of 1942 combined with (*b*) a shortage in the stock of old rice carried forward from 1942 to 1943. (2) Out of the total supply available for consumption in Bengal, the proportionate requirements of large sections of the population who normally buy their supplies from the market, either all the year round or during a part of the year, were not distributed to them at a price which they could afford to pay. This was due to (*a*) the incapacity of the trade operating freely in response to supply and demand to effect such a distribution in the conditions prevailing and (*b*) the absence of that measure of control, by the Bengal Government, over producers, traders and consumers in Bengal necessary for ensuring such a distribution. (3) The supply of rice and wheat which under normal conditions, would have been available to Bengal from sources external to the province, was not available during the closing months of 1942 and the early part of 1943. This was due to (*a*) the loss of imports of rice from Burma and (*b*) the delay in the establishment of a system of planned movement of supplies from surplus provinces and states to deficit provinces and states."

It looks now that the public was right when they accused the Government in 1943 of panicky buying, boat and rice denial policy, lack of control over distribution and profiteering, bungling, and mismanagement. Men at the helm of affairs had neither vision nor the heart. In Bengal, the food shortage as estimated by the Commission was only 15 per cent. In Cochin and Travancore, the food shortage amounted to about 40 per cent[5], and yet deaths from starvation in those areas were negligible because of efficient measures and foresight. Couldn't this happen to Bengal? The bureaucracy was too callous, cruel and inefficient to wake up and prevent this catastrophe, a slur on any civilized Government of present day. Consequently, 29 subdivisions with a total area of 21,665 sq. miles and a population of 20 million were on the brink of starvation and the intensity of distress was greatest. About 1·5 million deaths occurred as a direct result of the famine and the epidemics which followed in its train. It may be mentioned here that unofficial estimate put the mortality at 3·5 million. Even the official estimate of 1·5 million deaths is a figure far greater than the combined mortality of Great Britain and U.S.A. during the six years of bloodiest war in human history.

Regarding the mortality curve the Commission found out that[6]

"Nearly all the famine mortality occurred in the second half of the year. During the first 6 months mortality was only 1·9 per cent in excess of the quinquennial average. From July to December, 1943, 1,304,323 deaths were recorded as against an average of 626,048 in the previous quinquennium, representing an increase in mortality of 108·3 per cent."

"Death continued to take its toll in 1944. In the first 6 months of 1944, 981,228 deaths were recorded, an excess of 422,371 over the quinquennial average. The death rate during the year from July 1943 to June 1944, reached 37·6 per mille. The complete mortality figures for 1944, which are not available at the time of writing may show that, as far as excess mortality is concerned, the year 1944 was almost as disastrous as the previous one."

Profiteers, speculators and hoarders ran amuck and the Government looked helpless to check them and even put its own house in order. The price of rice rose to fantastic heights—and the people starved and died. It has been reckoned that the amount of unusual profits made on buying and selling of rice during 1943 was 150 crores of rupees. The Famine Commission on rough calculation estimates that "every death in the famine was balanced by roughly a thousand rupees of excess profit"[7]. Thus the Commission remarks[8].

"It has been for us a sad task to inquire into the course and causes of the Bengal famine. We have been haunted by a deep sense of tragedy. A million and a half of the poor of Bengal fell victim to circumstances for which they themselves were not responsible. Society together with its organs, failed to protect its weaker members. Indeed there was a moral and social breakdown as well as an administration breakdown."

[1] Editorial—*J. Indian M. A.*, **12**:167, 1943.
[2] The Famine Inquiry Commission—Report on Bengal, p. 225-227. Published by the Manager of Publication, Delhi, 1945.
[3] Editorial—*J. Indian M. A.*, **13**:27, 1943.
[4] The Famine Inquiry Commission—Report on Bengal, p. 77. Published by the Manager of Publication, Delhi, 1945.
[5] *Science and Culture*, **10**:512, 1945.
[6] Famine Inquiry Commission—Report on Bengal, p. 108. Published by the Manager of Publication, Delhi, 1945.
[7] *Idem*—p. 83.
[8] *Idem*—p. 107.

So one cannot escape the conclusion that the famine was mainly man made and preventible. One is astonished at the unpreparedness of India to meet the food situation during an emergency. "For years numerous investigators and writers on economic, agricultural, medical and nutritional problems had been pointing to the seriousness of the food situation in India. Stationary, if not declining, food production, rapidly increasing population, underfed millions, disease and high mortality had been the topics of serious thoughts and discussion. Was the Government ignorant of the normal food situation in the country? Did not dwindling exports and increasing imports for a pre-eminently agricultural country indicate danger?"[9].

The report is full of facts and figures and is a document prepared with care, patience, and thoroughness. But it is a "post mortem" report for the diagnosis and treatment for the prevention of future famines. A mortality of 1·5 million people is a very high price for this knowledge. Famine in this country is only an acute manifestation of the chronic malady—poverty, malnutrition and disease. In ordinary time a greater part of the population lives on the verge of starvation and cannot stand any economic strain. This low economic level with no margin of safety is associated with malnutrition and epidemic disease. Whatever the Commission recommends to prevent future famines, nothing can succeed unless the low economic standard is raised by industrialisation associated with political responsibility.

PEDIATRICS IN INDIA

Though infant mortality (on birth) in British India amounts to the appalling proportion of 174·4 per 1,000 live births and child mortality (under one year) in Bengal is 184·2 per 1,000 and that in Calcutta 317, very little effeort has been made to ameliorate the condition. Bose[1] in one of his lectures told that Bengal villages are now-a-days barren of children; in normal times, children used to flock round the foreigners, but today, famine, pestilence, epidemic, malnutrition are having their heavy tolls and are plucking the youthful citizens of our country. And it is imperative that we should do something for the young folk so that they can be saved.

Ten universities in India have medical faculties and 14 colleges are affiliated to them. To none of these 14 colleges is attached a children's hospital, nor even a properly equipped pediatric department with suitable personnel, equipment, teaching and research facilities. Child patients are admitted either in medical or obstetric wards and are taken care of either by general physicians or obstetricians. "None of the colleges have anything approaching Great Ormond Street Children's Hospital in London, Universities-Kinderklinik in Vienna or Harriet-Lane Clinic at Johns Hopkins University at Baltimore. There are childrens' wards in some hospitals but are mere names only and have no out-patients department attached to them, no laboratories, no infectious blocks, no libraries, kitchen, child-welfare centre nor any child guidance clinics. There is no professor of pediatrics in any of the Indian universities.

There exists no programme for research or special higher teaching. With this arrangement in teaching and research, the average medical student necessarily passes out of the college with very scanty knowledge of pediatrics. As they are rarely brought face to face with the little patients, they do not learn anything pertaining to special anatomy, physiology, clinical methods or treatment of children nor do they develop any interest for infants, who unfortunately form the main bulk of our general practitioner's clientele. The result is also reflected in special practice. In this vast continent of India only a few physicians practise only in pediatrics. Most of the children disease specialists also practise either in general medicine or in obstetrics. This shows that there is an all-round deficiency, callousness and lack of organisation in pediatrics in our country, with the result that we fail to understand that many of the seeds are sown in childhood from which grow the incapacities, illnesses and morbidities of adult life. We do not realise that if we spend the money spent for curative centres to look after children we can save quite a large number of people from a crippled life. It does not strike us that the welfare of children, must therefore be one of the chief cares of the Nation.

Pediatrics has other departments also; school health, child labour, etc., all embrace the big subject and these require careful study, thought and application. In England, progress towards amelioration of cruelty to children and child labour, development of proper school health were singularly slow. Starting from 1802, while she enacted the Health and Morals of Apprentices Act, even to-day she is groping for the right solution of child health and labour. It has its reflection in India today. Indifference of the public and legislatures is criminal. In the United Kingdom, the Child Welfare Act was passed in 1914 and in America, Washington Draft Convention in 1919 but no steps have been taken here in this direction. With the post-war schemes both for Medical Education and Public Health, pediatrics has come to the forefront both in America and England. It has been recognised that pediatrics can no longer be tucked as a tail behind midwifery or general medicine. In public health and teaching, where prevention has become the main principle around which all the schemes revolve, pediatrics has assumed the magnitude of a major subject in its own right like internal medicine, general surgery, obstetrics and gynecology. Robert Hutchison[2] has said in greeting to the *Indian Journal of Pediatrics*, "It is a commonplace to say that the welfare of children is the interest of mankind as a whole and certainly anything which makes for the better understanding of diseases in children in India . . . . must also be of service to children throughout the whole world and help in its own degree to bind the nations together". Unfortunately, no national or international organisation has come forward to help our growing manhood.

In our country, the Government has thrown in emergency schemes for prevention of venereal diseases, may not a provision be made and a temporary scheme be put in action for child welfare also? Child is the father of man. If the child dies where will the future parent be?

[9] *Idem*—Minute by Mr. Afzal Husain, p. 198.
[1] Bose, B.—Personal Communication.
[2] Hutchison, R.—*Indian J. Pediat*, **11**:60, 1944.

CURRENT MEDICAL LITERATURE

Dehydration

Black (*Lancet*, **1**:298, 1945) writes that in water deficiency the urine is concentrated and of low volume, the osmotic pressure of the plasma is high, and in the earlier stages at least there is no hæmoconcentration. In salt deficiency the urine is dilute and there may be polyuria, the osmotic pressure of plasma is low, and there is hæmoconcentration.

In clinical dehydration water and salt are usually both deficient but in varying degree, and it is still important to assess which deficiency predominates, for treatment appropriate to salt deficiency is quite unsuitable when water is depleted to a greater extent than salt.

In judging the nature of the deficiency present in any given patient, the cause of fluid imbalance must be considered as well as his present clinical state. Additional help is given by estimation of the chloride in urine or plasma, or of the serum sodium.

The appropriate fluids for treating water deficiency are water or 5 per cent glucose, for treating mixed water and salt deficiency normal or half-normal saline, and for treating salt deficiency normal saline, except in the severest cases where hypertonic saline may be required.

Signs and Symptoms of Impending Cerebral Haemorrhage

Taylor and Page (*J.A.M.A.*, **127**:384, 1945) write that the records of 40 patients who died with essential hypertension were examined to determine whether or not the clinical courses of those who died of cerebral hæmorrhage were similar enough to allow an accurate prediction of apoplexy. Among this group 19 had fatal cerebral hæmorrhages. Five signs and symptoms were consistently observed. These were (1) severe occipital or nuchal headches, (2) vertigo or syncope, (3) motor or sensory neurologic disturbances, (4) nosebleeds and (5) retinal hæmorrhages in the absence of papillœdema or exudates. These findings were negligible or absent among those patients who died of other causes. It is concluded that demonstration of any four of these manifestations in persons with essential hypertension warrants the assumption that death from cerebral hæmorrhage will occur within 0·8 to five years (average 2·1 years).

Prolonging the Action of Penicillin

Trumper and Hutter (*Science*, **100**:432, 1944, Ref. *J.A.M.A.*, **127**: 161, 1945) report from the Bethesda Medical Centre the third method of prolonging the action of penicillin (the first method was by excretory blockade by simultaneous intramuscular injection of diodrast or of p-aminohippuric acid and the second method was by using penicillin suspended in an inert oil). This method is based on an attempt to delay absorption by prolonged vasoconstriction in the injected muscle. Vasoconstriction was effected by a chilling technic. An ice bag was applied to the deltoid region two hours before the intramuscular injection and replaced for a period of six to twelve hours after the injection. With this technic a single intramuscular injection of 50,000 units of penicillin in saline solution maintains an adequate bacteriostatic level of penicillin in the blood stream for from six to twelve hours. Thus far the chilling technic has been applied to 18 gonorrheal patients, 17 of whom were cured by a single intramuscular injection. This is a percentage of cure equal to that with the penicillin-beeswax-peanut oil mixture. Application of an ice bag two hours in advance of the injection renders the injection painless.

The chilling technic may be applied in research with other therapeutic agents. With specific antiserums it might well reduce allergic reactions.

Prevention and Attenuation of Infectious Hepatitis by Gamma Globulin

Stokes and Neefe (*J.A.M.A.*, **127**:144, 1945) write that during an epidemic of infectious hepatitis in a summer camp for boys and girls gamma globulin was injected intramuscularly into 53 of 331 persons who at the time showed no signs of the disease. The results, which are statistically significant, indicate that gamma globulin is capable of preventing or attenuating infectious hepatitis when administered to exposed persons during the incubation period of the disease. This effect is comparable to that observed with the use of gamma globulin in measles. Although the data suggest that the best results are obtained when the globulin is injected early in the incubation period, it seems possible that, as in measles, it may also be of therapeutic value if given early in the prierteric stage of hepatitis. The results obtained in this epidemic are sufficiently encouraging to warrant further trials of gamma globulin in the control of future epidemics of this disease. This is especially desirable because no other effective control measures have as yet been developed.

Skin Eruptions due to Application of Sulphonamides

Peterkin (*Brit. J. Dermat. & Syph.*, **57**:1, 1945) reports that out of 65 cases of light eruption caused by external application of sulphonamides 32 had been treated for impetigo, 8 for impetiginized seborrhœic dermatitis, 3 for septic infection of the limbs, 2 for secondarily infected tinea of the feet, 5 for running ears and 15 for wounds and burns of the limbs. In 61 out of these 65 cases sulphanilamide powder was the first sulphonamide drug to be applied, that the eruption is invariably or almost invariably, preceded by application of the powder and that the patient becomes sensitized to the drug by its inhalation. It is suggested that powdered sulphonamides should not be applied to the skin for minor conditions. Over 200 cases, including 183 of impetigo or impetiginized seborrhœic dermatitis were treated in North Africa with 5 per cent sulphathiazole in Lassar's paste or Lanette wax cream and their skin freely exposed to light—only one patient (with respirator dermatitis) developed eruption described. It is considered that 5 per cent sulphathiazole in a suitable base is probably as safe as such drugs as ammoniated mercury for dermatological therapy and gives better results.

Medical Treatment of Gall-Bladder Disease

Dolkart (*Illinois M. J.*, **87**:44, 1945) points out the following principles involved in treating gall bladder disease:—

1. *Prevention of spasm*—This is achieved through the use of antispasmodics in which the chief reliance should be placed in atropine or atropine derivatives such as belladonna. Some of the synthetic antispasmodics such as Pavatrine or Trasentine have an indeterminate value. Spasm can further be prevented by the control of diet. Usually associated with gall-bladder disease there are manifestations of bowel irritability. Cathartics should be avoided. A bland diet with uncooked fat added, dependent upon the acuteness of the symptoms and the individual level of fat tolerance usually suffices for the purpose.

2. *Facilitation of gall-bladder emptying*—This is the second principle of management to be achieved. This is accomplished both by the prevention of spasm and by the supplemental addition of uncooked fat. In this connection it must be borne in mind that the reason why people with gall-bladder disaese or with irritable bowel syndrome or with duodenal ulcer are unable to tolerate cooked fat is because in the process of cooking, the fat is oxidized from neutral fat to fatty acid in which form it acts as a gastric irritant. Uncooked fats such as butter, eggs, cream, or cheese are usually tolerated. The use of such physiologic stimulants to gall-bladder contraction and emptying must be borne in mind and their use guided by the patient's ability to tolerate such stimulation. Many of our patients were placed upon hourly feedings of milk and cream and got along much better than when fats were totally restricted.

3. The third factor consists of efforts to *increase the flow of hepatic bile* through the use of bile salts which act directly upon the liver cells. In our opinion greater choleresis is achieved with the use of oxidized bile salts. Further, fewer signs of intolerance occur with this form of bile salts than with the unoxidized forms.

These principles of management differ from the widely used low fat, low cholesterol diet associated with the administration of magnesium sulphate or other saline cathartic. If gall-bladder stasis is to be overcome, the most physiologic method of inducing gall-bladder evacuation—the presence of fat in the duodenum, is totally disregarded. The low fat diet places the gall-bladder at rest whereas the magnesium sulphate causes relaxation of the sphincter and gall-bladder emptying. There seems to be little logic in abandoning a physiologic

method of inducing gall-bladder emptying and substituting an artificial mechanism. Furthermore, according to Ivy the concensus is that maghesium sulphate is not as effective a cholagogue as is egg yolk, cream or olive oil. Despite the fact that people with diseased gall-bladders are commonly chronically constipated and magnesium sulphate does not have a cathartic action, the end result of its continued use is generally the development of a highly irritable bowel with accompanying reflex pylorospasm to add to the original complaints referable to the gall-bladder. Studies by Fox, Gardner, Gainsborough, McMaster, Elman and others indicate that the cholesterol in the diet has no relation to either the blood or bile cholesterol levels. There would appear to be little object, therefore in limiting foods high in cholesterol.

Treatment of Infective Hepatitis

There is enough evidence to suggest that in the present epidemics of jaundice in the Mediterranean theatre of operations and elsewhere the relative incidence has been much lower in native troops, but the relative mortality has been higher; the difference in mortality may well be due to the prophylactic value of the higher protein content of the diet of white troops. In treatment there has been a tendency to increase the protein as well as the carbohydrate in the diet at the expense of the fat, but it cannot be said that any convincing evidence has been obtained to justify such a break with tradition. Beattie has claimed that the average time spent in hospital in a large series of patients with acute hepatic dysfunction is inversely proportional to the protein intake. As the appetite is inversely proportional to the severity of the illness, Beattie also speaks favourably of the value of casein digests, cystine, methionine, and choline, but he indicates that, owing to the great variability of infective hepatitis, it would be impossible to prove a statistical effect from these supplements without very large number of cases. Turner and co-workers, whose experience is based on over 4,000 cases of homologous serum jaundice, state bluntly that methionine and choline failed to yield beneficial results. Richardson, in a small series of cases of infective hepatitis not yet published, has failed to demonstrate any effect with choline. Peters and co-workers have observed no more than a slight benefit from cysteine and methionine in the treatment of postarsenical jaundice. It is important to realize the conditions of this trial. Mild cases of jaundice and patients jaundiced for more than 14 days were excluded from the analysis, so that only 150 out of a total of 468 patients were left in the trial. The duration of illness in the methionine-treated cases averaged 20 days, as compared with 26 days for the control, and there was considerably individual variation. So small an effect in so carefully chosen a group may be statistically significant and yet remain clinically insignificant. Details of therapeutic trials of methionine in infective hepatitis by groups of workers at Cambridge and Oxford reveal that in the two series there were 68 treated cases and 68 controls. The conclusion is reached that treatment with methionine has no significant effect on the severity or duration of infective hepatitis or the incidence of relapses. It may be pertinent at this point to reflect on the cost of treatment with methionine. In a recent price list of fine chemicals methionine was quoted at 7s. per gramme. The daily dose is 5 grammes, and the average duration of treatment 14 days. This would work out at nearly £25 per patient, and the cost would be unlikely to be reduced more than 50 per cent by large-scale production, as the synthesis of methionine is difficult. Moreover, more methionine might mean less mepacrine and less D.D.T. Finally, it would appear that methionine may have an important place in the treatment of burns and exfoliative dermatitis. In the present phase of scarcity, therefore, there can be little excuse for recommending methionine in the treatment of jaundice.

What, then, are the indications for treatment in infective hepatitis? The first is rest in bed, which should be continued until the liver is no longer tender and the urine is free from bile, preferably by the delicate Hunter reaction. The routine diet should be high in carbohydrate, low in fat, and high in proteins. The emphasis should be on the carbohydrate, and fat should not be reduced to a level at which the food becomes dry and unpalatable. Palatability of the diet and avoidance of undernutrition are indeed primary factors in the treatment of a disease in which loss of appetite is the leading symptom, and Turner came to the sobering conclusion that patients who were allowed to choose their own diet did at least as well as, and in some instances perhaps better than, the average. Fresh milk is often well taken: the cream which separates on standing can be removed, though this is not absolutely necessary. Dried milk is often rejected. Fruit drinks ensure a large intake of fluid, carbohydrate, and vitamin C. Regularity and frequency of food intake are probably of greater importance than exactness in the composition of the diet, and Turner believes that if patients were given an infusion of glucose for each meal avoided or vomited some disasters might be obviated. Routine treatment with dextrose and insulin, however, is of no advantage, and the same appears to be true of extra vitamins, calcium salts, and liver extract. There is a suggestion that both liver extract and plasma may produce unpleasant reactions. In conclusion it would seem that infective hepatitis provides one more example of the care that must be taken in applying knowledge gained in the field of nutrition to the treatment of infective disease. —*Brit. M. J.*, **1**:415, 1945.

The Abuse of Rest

A recent symposium in the Journal of the American Medical Association speaks roundly of the abuse of rest and the evil sequels of recumbency. Rest is blamed for bone atrophy, muscular wasting, vasomotor instability, constipation, cathartic habituation, backache, and many other chronic disabilities. In later life it favours the onset of bladder trouble, pulmonary œdema, and uræmia. Harrison points out that John Hunter and Sir James Mackenzie suffered from angina pectoris, and their hearts bore the scars of cardiac infarcts at necropsy; yet both men worked hard for some twenty years after the beginning of cardiac symptoms and probably ten years after serious cardiac infarction. Yet neither ever remained in bed for any long period of time. Harrison argues that there is no proof that rest in bed, carried out for many weeks after symptoms have disappeared, is of value in the physical management of the patient with congestive failure, angina pectoris, or myocardial infarction. He brings evidence from animal experiments to suggest that nowadays we confine the patient to bed needlessly long after a coronary thrombosis and hints that this may even favour a second thrombosis or a pulmonary embolus. Harrison's views did not go without challenge. It all depends on what you mean by rest, as Dr. C. E. M. Joad would say. There is generally condemnation of strict recumbency, particularly when it is enforced by sedation and punctuated by periods of violent exertion on the bed pan; but not even "global war" can alter the fact that the rate of metabolism and the work of the heart are diminished by rest. Levine is undoubtedly right when he points out that strict bed rest in heart failure may bring about pulmonary congestion from redistribution of blood and œdema fluid, and pulmonary embolism from the thrombi which form in the stagnant blood in the legs when the calf veins are compressed in the horizontal position. These risks can be diminished by a modicum of activity and the use of a chair until œdema and congestion have been relieved by appropriate medication. But in advising that rest need not be prescribed for a longer period than two or three weeks after the more acute and alarming symptoms of a coronary thrombosis have subsided, Harrison perhaps overstates the case. Both in coronary thrombosis and in acute rheumatism the majority of physicians would feel it wise to keep their patients at rest until the inflammatory process has subsided, though this need not mean strict recumbency, and the use of the commode need not be forbidden. It is difficult to defend any arbitrary period of confinement to bed, and treatment should be suited to the individual on the basis of the severity of the attack and the course of the fever, the leucocyte count, and the erythrocyte sedimentation rate.

The value of rest in pregnancy and after confinement is a fruitful topic of debate, and in both this country and America there are numerous advocates of a reduction in the lying-in period. This is not a simple problem, for it is linked up with the establishment of lactation and the psychology of motherhood. It will be generally agreed, however, that rest and regular hours of infant feeding can sometimes be too dearly bought; mother and child are reciprocal parts of the family whose integration in the puerperium is no less important than the involution of the uterus. Convalescence from a surgical

operation is a simpler problem, and Powers presents some striking figures for 100 consecutive patients who were allowed to sit in a chair and to walk on the first day after major operations. He indicates that local complications such as the breakdown of wounds or hernia are actually less common in these circumstances, while the remote complications of operation are greatly reduced: The patient is not "deconditioned", as he is by prolonged rest in bed, and the return to work is accelerated. In orthopædic surgery the aim has long been to localize rest as sharply as possible and avoid general immobilization, and anyone who has seen the work of our new accident services will have been surprised by the short time in which patients are able to get about in comfort after fractured skulls or disabling injuries. Menninger concludes the series of articles with an amusing criticism of the Weir-Mitchell treatment and of similar measures whereby it is hoped to cure psychological illness by rest cures, relaxation treatments, or holiday trips. "The things that disturb people are not what they hear on the radio: they are what is in their hearts." In psychological breakdown due to exposure to prodigious stress, such as occurs in battle casualties, prompt and complete rest is indeed of enormous benefit, and it must be secured by heavy sedation. But when men break down under conditions of peace they do so from the turning inward of aggressive tendencies, and they require not rest but mental reorientation, physical exertion, and the directed use of muscles to prevent the accumulation of this self-destructive energy.

This American symposium is written under the influence of wartime shortages of beds and doctors, and some of it has a flavour of special pleading. Nevertheless it should be of value in making us question customary procedures, particularly in hospital practice. In recent years a number of these traditional producers have been revised. The ritual purgation of patients is no longer condoned, and the patient with a hæmatemesis is fed. Morphine is regarded as one of the best drugs for renal dyspnœa, instead of being frowned on, as in the past. A hospital is now known to be dangerous place for a small infant, and it may be equally bad for the old and feeble, who never again pick up the thread of activity once they have let it drop. Absolute rest gained a well-deserved reputation in tuberculosis, but it may be a veritable bed of Procrustes if it is applied to every form of serious illness. Whenever we put a patient to bed we should ask ourselves what we hope to achieve; and it must be something more than a tidy ward, a convenience for examination, or a substitute for a convalescent room. The folly of treating obesity in bed, or of balancing the diet and insulin in a dibetic under conditions of complete rest, is only too common a sight in hospital wards. In every illness, too, we should ask ourselves how the individual patient reacts to rest in bed. For many it is a sheer delight, but for others it is a tedious ordeal which produces a continual mental strain and is much less restful than a discreet amount of activity. (*Brit. M. J.*, **1**:416, 1945).

How to Avoid Flare-ups of Peptic Ulcer

Alvarez (*J. A. M. A.*, **125**:13, 1944) writes that when a patient who has had an ulcer goes through an emotional crisis he should immediately start taking food every hour or two and he should not wait for the expected flare-up or hæmorrhage and perforation. The author contends that extra feedings are probably most needed between the hours of 10 P.M. and 3 A.M.

Thiouracil in Thyrotoxicoses

Eaton (*Lancet*, **1**:171, 1945), writes that thirty-six cases of thyrotoxicosis were treated with thiouracil, including 4 with toxic adenoma, 4 recurring after thyroidectomy, 4 diabetics, and 2 during pregnancy. Pulse-rate, blood-pressure, body-weight, basal metabolism, and white blood-cell count were regularly observed. All but one (a diabetic) responded well. The effects were similar in males and females and at all ages.

The maximum dose required was 800 mg. daily, with 200 mg. as a maintenance dose. Seven cases have remained well after treatment though the drug has not been given for periods of 3½ to 8 months.

Thiouracil was beneficial in thyrotoxicosis during pregnancy and did not affect the pregnancy except that in one patient receiving the drug until confinement the child had an enlarged thyroid gland.

No toxic effects have been seen, though one patient had transient granulocytopenia.

Phenol-Camphor Treatment of Dermatophytosis

Phillips (*Brit. J. Dermat and Syph.*, **56**:219, 1944) from the analysis of the results of the phenol-camphor treatment of tinea pedis, tinea cruris and tinea axillaris observes the following points: The investigation included the examination of 3250 men and 500 women; the incidence of dermatophytosis amongst men was 5·5% and amongst women 6%; the total number of cases treated with phenol-camphor was 230 of which 137 cases were T. pedis, 83 cases of T. cruris and 10 cases of T. axillaris; the diagnosis was made on clinical grounds and confirmed by microscopy; the results of treatment were: the average time for cure of T. cruris, 4·3 days, for T. pedis, 4·5 days and for T. axillaris, 4·9 and there were no failures and only 1·7% relapsed during 3 months follow-up and no toxic reactions, either local or general were observed. *Preparation of phenol-camphor*—equal quantities of pure phenol and pure camphor are placed in a mortar and triturated with a pestle until liquefied; the solution is then ready for use. *No moisture or water must be allowed to come into contact with phenol-camphor or severe burns may be produced.* The treatment has the following advantages over other forms of treatment: (*a*) It is clean, non-greasy and easily applied; (*b*) it is non-irritating and does not stain; (3) no dressings are required; (4) infected areas are not obscured by staining or erythema and the end point of treatment is easily recognized; (5) phenol-camphor can be used until a cure is effected and the medicament does not require to be changed during the course of treatment.

Sulphathiazole in the Treatment of Gonorrhoea

Nair (*Indian J. Venereal Dis.*, **11**:1, 1945) reports that a series of 60 unselected cases of gonorrhœa in both sexes and of all stages, complicated or uncomplicated, treated with sulphothiazole (Cibazol) showed a 100% cure rate. For all straight-forward cases 10 tablets (5 gm.) of cibazol a day for 2 successive days were given by mouth preceded by on alkaline mixture and followed by a large tumberful of water. Complicated cases were given 6 tablets a day for another 2 days. No intolerance to the drug was noted. The drug thus seems pre-eminently the drug of choice in the treatment of gonorrhœa.

Treatment of Burns

A report issued by the Medical Research Council, London embodies observations on some 400 patients treated in the

wards and nearly 200 treated in the out-patient department of the Glasgow Royal Infirmary. Writing on first-Aid, Colebrook, Gibson, and Prof. J. P. Todd conclude that with severe or extensive burns no first-aid should be attempted beyond keeping the patient warm and giving morphine if need be; what chiefly matters is to get him to hospital. In other cases avoidance of infection by the hæmolytic streptococcus is the main consideration. For most small burns which are accessible "first-aid at the scene of the accident should usually be limited to covering the injured skin with a recently laundered clean towel, or, better, if it is available, with a sterile cloth"; but when quite superficial small burns are treated at home, or when larger burns cannot receive "plenary" treatment without considerable delay, they may be smeared with a water-soluble cream containing 1% of 'Cetavlon' and 3% of sulphanilamide. This is done with a knife-blade or spoon, with aseptic precautions: the operator's hand must be thoroughly washed and dried and he should mask his nose and mouth. The burn is then carefully wrapped in sterile lint and a bandage, or in a clean towel; but if possible the cream should be removed within 2 days because of a slight risk of dermatitis.

Gibson and Brown believe that loss of fluid usually continues for 24-30 hours. Adults with burns of more than 15% of the body surface, and children with burns of more than 5-10% need transfusion of plasma or serum in amounts large enough to replace the fluid lost and prevent hæmoconcentration. Transfusion should begin as early as possible, and its rate should be controlled, throughout the shock period, by repeated blood estimations; the blood-pressure and pulse-rate are much less reliable; indeed the BP may be normal or high though hæmoconcentration has begun. Plasma can easily be given too quickly or in too great amount, particularly in children; and there is special danger of pulmonary œdema in patients who have inhaled hot gases or irritant vapours. Nevertheless "much larger amounts than hitherto recommended are often necessary," frequent observation and a nice clinical judgment being required to strike the happy mean. Until shock is overcome, local treatment should in most cases be confined to application of a first-aid dressing." Blisters are snipped and a trickle of cetavlon solution is run over the whole surface, which is then covered with sheets of gauze," previously spread with the cream already mentioned. Complete cleansing and dressing are postponed till the 2nd or 3rd day.

The plenary treatment adopted at Glasgow relies largely on cleansing with the detergent antiseptic cetavlon, ordinarily without a general anæsthetic: "under the routine dose of morphine given to patients with severe burns, the cleaning-up process has usually caused little or no pain." After cleansing, a mixed sulphonamide cream is applied—the one now recommended containing sulphanilamide (3g.), sulphathiazole (3g.), glycerin (10g.), castor oil (25g.), 'Lanette' wax sx (10g.), and water (49g.). The burn, which must be widely covered and firmly bandaged, is left untouched as a rule for 7-10 days, or even 12, unless the affected area is such that contamination is unavoidable. A little fever (up to 102°F) is in itself no indication for changing the dressing, for "such fevers are frequently reactions to injury." For routine use the Glasgow workers prefer to give sulphonamides locally rather than orally, and they "have a strong impression that the bactercidal effect we hoped for has to a large extent been achieved both by sulphanilamide and by sulphathiazole." But the hæmolytic streptococcus was able to establish itself in 83 out of 243 inpatients, and they think it unlikely that chemotherapy will ever suffice to guard the great majority of burns from infection throughout the long weeks of healing. What is necessary therefore is to reduce the opportunities for infection during treatment: "We must work out a system of preventive measures, analogous to those of the operating theatre but appropriate to the different conditions obtaining in wards."

That is perhaps the most important lesson of the report. But Colebrook and his colleagues also draw attention to a second big problem that awaits solution—how to deal with the severe protein depletion or other profound metabolic disturbance which so often now kills burnt patients after 3-6 weeks, and probably greatly delays healing in those who survive. Anderson and Semeonoff, in a valuable chapter on the chemical changes they observed, state that the loss of nitrogen in the urine, though large in some of the cases, was not as excessive as that reported by some of the American workers. Badly burnt patients, however, could not take enough food to replace the protein they had lost, and it may be necessary in such cases to give protein digests intravenously or by intestinal tube. The series of papers concludes with Gibson's autopsy findings in 30 fatal cases, in 11 of which death took place after shock had been overcome. In 5 of these it was attributed to "sepsis," hypoproteinæmia, and anæmia."—*Lancet*, **1**:153, 1945.

Penicillin in eye Infections

Of the organisms commonly causing eye infections the most sensitive to penicillin are the hæmolytic streptococcus, the gonococcus, and some strains of staphylococcus. Streptococcus viridans and the pneumococcus are less sensitive, and staphylococci vary from extreme sensitivity to extreme resistance. It is now two years since penicillin was first used clinically as a local application to the eye and to judge from reports so far published it seems doubtful if our expectations of its usefulness in external eye disease will be realised. All agree that it is now the treatment of choice in gonococcal ophthalmia neonatorum, being an improvement on sulphapyridine for this condition, and it has also proved remarkably successful in clearing up chronic ulcerative blepharitis, hitherto a most disfiguring and resistant disease. Varied results have attained its use in catarrhal and mucopurulent conjunctivitis other than gonococcal, and in the treatment of corneal ulcer, and Keys (*J.A.M.A.*, **126**:649, 1941) finds that there is not much to choose between penicillin and sulphathiazole for these infections. Penicillin has been used in strengths ranging from 250 to 10.000 units per c.cm. of normal saline, the usual strength in this country being 500 Oxford units to the c.cm. If used in the form of drops the penicillin must be instilled every half-hour for acute infections and this in itself is a handicap to its universal use. If kept at room temperature, the drops lose much of their effectiveness in 48 hours and they should, therefore, be kept in a refrigerator. On the eyelids penicillin ointment is useful and Keyes used 25% hydrous wool fat and 75% coldcream as a base, one gramme of ointment containing 500 units of penicillin. Neely and Cross (*Lancet*, **1**:85, 1945) describe a penicillin lamella, each lamella containing 100 units. The lamellae have the advantage that they do not degenerate at room temperature and preserve their potency for a long time, being thus especially useful for service conditions. For acute iritis due to gonococcus there seems no doubt that penicillin given intramuscularly by injection or by drip is effective, and it is also recommended as an irrigation for the anterior chamber of the eye in severe infections and war wounds. Cashell (*Brit. M. J.*, **1**:420, 1944) irrigated the anterior chamber in 2 cases of perforating injury with good results—*Lancet*, **1**:92, 1945.

Foreign Bodies in the Digestive Tract

Brown (*Radiology*, **44**:143, 1945) writes that foreign bodies of whatever nature may prove to be of serious significance when they are stalled anywhere in the course of the digestive tract. The diagnosis must be made with the least possible delay, in order to prevent such complications as obstructions, perforation, and abscess formation. Rœntgen examination has been found to be the most useful method for establishing an accurate diagnosis.

The technic is simple. A fluoroscopic survey should be made of the neck, chest and abdomen, especially in the case of infants and children. In adults, a lateral view of the neck in the presence of a foreign body will reveal direct or indirect evidence in practically all cases. One should carefully note the width of the retrotracheal space, which is, as a rule, normally narrower than that of the trachea or the bodies of the vertebrae. If the width of the retrotracheal space exceeds that of the trachea or the vertebral bodies, one should suspect the bone fragments.

Most of the foreign bodies in the thoracic portion of the œsophagus can be demonstrated indirectly by the introduction of an opaque substance, but first a plain lateral view of the chest should be made and carefully examined in order to avoid obscuring a moderately dense shadow of a foreign body. Several cases have been selected from a large group, illustrating various foreign bodies in the digestive tract.

Factors Influencing Mortality in Head Injury

Voris (*Radiology*, **44**:166, 1945) gives in the following lines the summary of his observations:—

1. The location and severity of the brain injury are the most important factors influencing mortality in injuries of the head.

2. Next in importance is the age of the patient.

3. The presence or asence of skull fracture is not of importance except in compound fractures, depressed fractures, fractures involving the middle ear or nasal accessory sinuses, and fractures causing a tear of the middle meningeal artery or one of its branches.

4. The presence and amount of blood in the cerebrospinal fluid are an important prognostic sign. When lumbar spinal pressure is increased, the mortality rate is higher, but lumbar spinal manometric readings do not always give a dependable indication of intracranial pressure.

5. Associated injuries, especially of the chest, spine, or spinal cord, significantly increase the danger to the patient's life.

6. Associated disease does likewise, particularly cardiovascular, renal disease and acute pulmonary complications.

7. Meningitis is relatively rare but has a high mortality and must be treated promptly and enregetically if the patient is to survive.

March Fracture

Bernstein and Stone (*J. Bone and Jt. Surg.*, **26**:743, 1944) from observations on 207 cases of march fracture of the foot at camp—Wolters, Texas, disagree with the conclusions drawn by some authors that most of these men do not make good infantry soldiers once they have suffered such a fracture because their ability to walk great distances is gone. They insist that with their method of treatment the trainees with march fracture recover completely, make good infantry soldiers and finish all the required prolonged marches and speed hikes. The treatment is not original but has been used previously for fractures of the toes, bursitis between the heads of the metatarsals and various other conditions of the foot. Patients with a march fracture complain of pain during the push-off phase of the gait, when the weight is borne on the heads of the first, second and fifth metatarsals, with the toes dorsiflexed and the heel off the ground. If during the gait the foot is held rigid, thus climinating motion at the metatarsophalangeal joints, the pain is greatly decreased. In order to accomplish this rigidity a steel bar ¼ to ⅝ inch wide, ⅛ inch thick and 6 inches long is countersunk into the sole of the shoe. The relief obtained becomes more noticeable after several days, as soon as the patient becomes accustomed to walking with a stiff soled shoes. Most patients continue with their full training and are not hospitalized. Occasionally the patient is further relieved by placing a felt pad along the longitudinal arch. The steel bar is kept in position for four to five weeks, at which time the fracture has solidly healed. The metal bar can then be removed and used again.

Influence of Sulphonamides of Postoperative Complications

Rhods and Ravdin (*Ann. Surg.*, **120**:463, 1944) studied the mortality of the postoperative infection occurring in a general surgical service and made a comparison of the experience during the three years prior to the introduction of the sulphonamides with the experience during the four years following their general acceptance. The most important advance occurred in the treatment of postoperative bronchopneumonia, the gross mortality dropping from 69 per cent to 9 per cent. It is pointed out that better control of postoperative complications not only permits some saving of life but also permits a broader selection of patients, especially in the older age groups, for certain operations which are indicated but in which in the past the contraindications have slightly outweighed the indications.

Penicillin in Gonorrhoea

Jones and others (*Lancet*, **1**:368, 1945) in reporting on an eight-hour scheme for treatment of gonorrhœa which has cured, over 99% of a series of 265 consecutive cases observes the following: *Scheme of treatment*—30,000 units of penicillin dissolved in 1·5 c.cm. of pyrogen-free sterile distilled water was injected intramuscularly or deeply subcutaneously at 2-hourly intervals for 5 doses *i.e.*, 150,000 units in 8 hours. *Selection of cases*—In this series the cases were unselected; every case sent to our establishment for treatment over the trial period was treated in this way. Gonococcus was demonstrated in every case before beginning of treatment. Of the first 200 cases treated by the scheme 26 were sulphonamide-resistant; 9 were failures or relapses from other schemes of penicillin treatment; 7 were choronic prostatic infections having had their discharge for periods ranging from 3 weeks to 5 months; 6 were having 'Mapharside' and bismuth for concurrent syphilis and I was having neoarsphenamine. *Tests of Cure*—Patients were given urethral and prostatic smears and cultures for 48 hours after treatment (by the time the blood serum and urine are penicillin-free) and a week, a month and 2 months after treatment. *Conclusions*—Cure rate was over 99%. Sulphonamide resistance or the duration of infection did not appear to have any effect on the response to penicillin. Concomitant arsenic and bismuth therapy is not a contraindication to the use of penicillin in the treatment of gonorrhœa.

Vitamin B and Liver in Coeliac Disease

Paterson and Associates (*Arch. Dis. Childhood*, **19**:99, 1944) treated twenty-six patients with idiopathic cœliac disease and 4 patients with the cœliac syndrome with liver extract given parenterally and vitamin B complex given parenterally and orally. Satisfactory gains in weight and height, and improvement in general health were obtained in the early weeks of treatment and sustained over a period of months in the patients who received sufficiently intensive and prolonged therapy. Less dramatic improvement and less satisfactory weight gains resulted when the parenteral liver extracts was given in conjunction with an oral instead of a parenteral vitamin B complex preparation. The children thrived on a normal balanced diet during or after the initial weeks of treatment. The total stool fats improved in all but 4 cases and returned to normal in 18 of 26. Slow improvement was commonly associated with the occurrence of upper respiratory infections. In the secondary type of the disease the "celiac syndrome," resulting from chronic foci of infection, improvement appeared to be hastened by intensive therapy with liver and vitamin B complex.

VI BENGAL PROVINCIAL MEDICAL CONFERENCE

The VI Bengal Provincial Medical Conference was held under the auspices of the Howrah Branch, I.M.A., on the 26th, 27th & 28th November, 1944 in the Ripon Collegiate School, Howrah. Rai Dr. U. N. Roychowdhury Bahadur inaugurated the ceremony and also opened the Exhibition. A symposium on Aspects of Nutritional Deficiency and their Dietetic Management was presided over by Dr. R. K. Pal, M.SC., M.B., M.R.C.P., D.SC., F.R.S.E., Dr. H. Roy, M.D., Dr. B. N. Banerji, M.B., M.R.C.P., Dr. N. L. Munshi, M.B., D.O.M.S. and Dr. Sunil Datta, M.D. taking part in the discussion. There were many features which contributed to the success of the Conference and made it at once useful and interesting.

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Address by Dr. P. K. Bannerjee, Chairman of the Reception Committee:

After according to the President of the Conference and members a hearty welcome Dr. Bannerjee lamented the death of Dr. Surendra Nath Ghosh of Salkia and others and bowed to them in reverence. He then surveyed the position of the medical practitioner:

Ten years' school and two years' undergraduate science studies,—four to six years' very costly intensive medical training and passing of perhaps the stiffest examinations in India, produce the Medical Practitioner. A fortunate few, then become Junior House Surgeons valued per month at Rs. 50 each after one or one-half year's honorary service. Very few secure better jobs, in the Railways and other services. The bulk have to help themselves as Independent General Medical Practitioners.

Dr. Bannerjee deplored that refresher courses to keep the practitioners up-to-date did not exist and post-graduate studies were too costly.

In towns, the practitioner has to face hard competition with State-Faculty registered practitioners of other systems of medicine and indiscriminate free treatment at the Government and other Hospitals.

He has to work day and night for a small fee. Some young doctors are medical examiners of Insurance companies, increasing in number, daily. These Companies make huge profits, declare fat dividends, amend their rules to double their Directors fees. But, they are for reducing their doctors' fees, quite small already, considering the demand for more and more searching examinations of the present day. Do they consider the doctor an important component of their business? Or is this an instance of exploitation of our profession which has not, yet a protective organisation?

The War denies many things to the Civil population, but, perhaps the sorest, to the denial of ready service of the faimly doctor in emergencies, on account of restricted petrol. In England, the war-time allotment of petrol to each general practitioner is 20 units monthly, as a rule, and for special purposes he may get more. He can use his coupons on a loan car. If short of petrol on his round, he can have petrol without coupons, which can be sent afterwards, etc., etc. Concern of Government for the medical need of the English Civil population, compared to that in Bengal, according to Dr. Bannerjee, was a sad contrast.

The village practitioner in addition to hard work against odds has to fight against ignorance and superstition and also be at the mercy of the zemindar for his very existence in the village.

Even a popular doctor is drawn into the vortex of village quarrels and factions. The result is serious to himself. Such a young popular doctor of Basantapur, District Howrah, decoyed by an urgent call one evening, went, not to return. Evidence pointed to murder, but, we have not even the melancholy satisfaction of seeing the murderers punished.

With the War, the doctor, increased in importance. Local practitioners are manning all the A.R.P. first aid posts and some have joined military medical service. In towns and villages, the practitioners were the first in the field, to fight pestilence, that came in the wake of war-famine. In Howrah the unbearable sight of people dying on roads, so moved a young impecunious general practitioner, that he, with his friends,—ordinary people, opened a twenty bed hospital, without waiting for funds. This hospital, "Arta Sebasram" begun functioning by begging and by its work has gained praise of all visitors, donation from Bengal Relief Fund and an annual grant from the Municipality. The Surgeon General has, now recognised the hospital and the S.D.O., the S.P. and other generous visitors have come forward with kind help in materials, still its wants are many, which the doctors and nurses are trying their best to make up by sympathy.

In these difficult times, had not the Friends' Ambulance Unit opened their milk canteens all over Bengal, it would have been impossible to save many children. The wide sympathy and readiness to help, that the F.A.U. displayed and the untiring zeal of their Mrs. E. Buert, were wonderful and heartened our drooping spirits. The inspiring sight, of a white lady, walking from village to village, along difficult pathways, enquiring about the moribund occupants of the delapidated huts, brought back the faith in the afflicted, that they were not forsaken by God. If, ever, history of this calamity, that has dislocated social life of Bengal, is written, the name of the Friends Ambulance Unit, their lady Secretary and all they did to help treatment and prevention of infant disease, in 1943, would be written in letters of gold. If Mrs. Buert chooses to write a book of her experiences, in Bengal, that would provide food for serious thought of Enquiry Commissions and would show how devastating the effect has been for want of medical planning in this country.

Long before the Health Insurance and the Ministry of Health in England, Rai Bahadur Dr. G. C. Chatterjee's Co-operative Anti-malaria Society, in its humble but effective way, has been operating in over 5,000 villages in Bengal. By rousing sanitary conscience of the villagers, the Society has succeeded in greatly minimising malaria and preventing other epidemics in these villages. This scheme, depending on voluntary subscription of the poor villagers and small donations from the Government, could not make as rapid a headway as the Health Insurance in England, based on compulsory payment by taxation. Why the Bengal Government, perhaps, the Champion imposer of taxes in India, have not yet thought of including the Health Insurance, in the list of taxations, passes understanding. Central Government's Adarkar scheme for labourers, touches only the fringe of the problem and is a few drop in the ocean.

In England, the Health Insurance is going to be amplified, to benefit the whole population, the Beveridge scheme. When, will the arbitrators of our destiny emulate the English example?

Never before we saw so much bossing by laymen over our profession as when the drug control began. Controlling authorities were the magistracy and the Director of supplies both non-medical in personnel. Ignorance of the importance of quick and sufficient supply of drug like M. & B. 693 and their slow, unsympathetic, rigid red-tape habit, caused much mischief and loss of lives. There was great dissatisfaction. The Public Health Department, perhaps, in suspended animation, could not be roused by our representation. Eventually, the control was withdrawn, but, for supply, there is no priority for doctors, nor is there any allotment on the basis of population or disease-incidence in Howrah, which we suggested to the Health Department.

Quinine distribution through Magistracy opened an era of harassment and scandal. This is changed. The Civil Surgeon is now in charge of distribution. Though his hands are tied by the rule this change has been satisfactory.

Whoever framed the quinine rules, is either a layman, or a medical man, who has forgotten practice. To make it obligatory for doctors to prescribe quinine in two forms only, *viz.*, the powder and the mixture, the tablets not being available, is a silly encroachment on the doctor's domain. The rule maker is not responsible for the lives of the doctors' patients. Served in these two unpalatable forms, quinine is wasted by vomit and what is more serious, vomiting exhausts the patient.

Luckily, our local authorities have no fetish for technicalities, which would have made the rules unworkable.

Much ado about nothing characterises quinine distribution. Two sign boards put up by the distributor and the quinine rules are supposed to help the public and the distributor for shortage of Quinine. The sign boards cost about Rs. 45 and the costs are not recoverable from the sale of Quinine. The container and the cork, high priced, have to be supplied with the mixture, for which no dispensing charge is allowed. As the public of Howrah can hardly read the Sign Boards, the writings have to be explained to customers to whom the rules have to be explained, also and after arguments when there is no stock

advice has to be given to complain to the Public Health Department, from whom, to expect a reply, is to cry for the moon. Few care to complain, so on the one hand, the Sign Boards do permanent propaganda to the uninitiated, to convince that all was right, on the other, absence of complaint, shows a clean record. Nice device to cloak incompetence!

With difficulty, our dispensaries were exempted from the shop act. Will such sign boards make our dispensaries shops and ourselves shop-keepers?

Engaged in doing the arduous duties of Medical Relief, in this critical time, handicapped by these distractions, the doctor got a rude shock when the Drug Control Order came. Kalidas wrote the poem, Mallinath made its commentary. This gave so many meanings to each line, which, perhaps did not occur to the Author himself at the time of writing. The Central Government framed the act, of which each provincial Mallinath gave its own different interpretation. Before however, this confusion cleared uniformed Excise Officers visited the dispensaries and coerced the doctors by threats, to become Licensed Retailers.

About Rs. 50, was the fee for the licenses. News later arrived, that, for doctor's dispensaries no Retailers' license was reqired. It was too late. Some applied for. refund and obtained it, many did not apply and felt, as the Inspectors assured, that the licenses meant peace.

The sense of security of the licensed ones soon proved false. Inspector's visit commenced. Reports went up, that, in his opinion, the paper control sign and the Retailers license were not properly displayed. Forthwith followed the notice to show cause why the licenses should not be cancelled! Might this notice, threatening cancellation of licenses, be another official device to stop further claims for refund?

Instead of augmenting the disturbances, should not the Excise Department have helped the licensed doctors, who, even if they wished, could not do retail sale, for want of supply, by sending the inspectors, to enquire about their wants and to move the stockists to expedite supply, where it is unsatisfactory? That this is not done, is because of the absence of doctors to direct this department.

Different Provinces differ in their scale of fees for the licenses. Perhaps, Bengal scale is the highest and most varied. It is for a lawyer to say, if this is regular. I.M.A. may enquire and take action, if needed.

The proposed Drugs Act now shelved, would have ensured purity of drugs. The Drugs Control Order benefits neither the public, nor the doctor. It benefits our Layman-bosses, flourishing as officers on fat pay.

The key to the success of the control, however, is the free doctor. He does free-examination, free-printed stationery for the prescription, does free dispensing of quinine, etc., procured at the cost of his time and money: He has to submit accounts timely, or to answer peremptory official demands for explanation. The poor public cannot pay him,—the Government makes his light pocket lighter! An Honorary worker par excellence, the doctors' oppressive load of responsibility is increasing, but alas, unlike the beasts of burden, nobody thinks of his fodder!!

Without any holiday, any sick-leave or leave on average pay under the official fundamental rules,—without any provident fund and old age pension or dearness allowance the doctor helps to swell the Ex-chequer, by keeping the tax payer alive, by himself paying several license fees, and by collecting the sales tax.

For these services among others, even on repeated prayers, the Government did not see their way to issue free purchase license to him.

In the midst of the disorders and confusion, one wonders, where is the Medical Council? Since its birth, what has the Council done? Countersignature of certificates, not necessary under the rules, is not stopped, even in the case of non-gazetted officers. The Railways—like the E.I.R., Government owned—flout the authority of the Council by their own certificate rules. A certificate every 4th day or 7th day from the attending physician is demanded by the E.I.R. Cannot the Council frame rules, fixing fees for the certificates, to be paid, not by the poor patient, but by the demanding rich authority? They pay the Civil Surgeon for counter-signatures or for a second opinion. So this rule will be proper.

Cannot the Council fix a higher fee for medical witnesses, in these days of dearness, to be paid by the Courts?

The question of fees, raised many times before, now needs a solution.

The Railway and other doctors are registered doctors and so, are under the Council ethically. The Council should direct them, that if forced to counter-sign, they should object. If the certificate looks suspicious, before rejection, there should be any enquiry according to the Council rules.

The offiial medical men, should remember, that they also, are our colleagues and by having regard for the practitioner, they respect themselves.

Unlike in last war, our manufacturers have helped us much. Had they but supply of raw materials by the Government, they could have done much more. Instead of helping the making of a very important drug (Sulphapyridine) in India, by suspending, on account of the War, the Patent rights for the drug, which the patentee original makers could not adequately supply, the Government merely looked on, while the prosecuted Indian makers made up their cases, by undergoing voluntary punishment. That, in spite of these, so many companies are floated for manufacture of drugs, speaks much for the Indian spirit of enterprise. One thing that, manufacturers would do well to remember, is, not to multiply coined names. Unless the names are restricted to their bases, or Pharmacopoeial equivalents, they can hardly find room in the doctor's head, however capacious it may be.

Also many of the products are therapeutic fallacies and their circulation by importancy of the agents, should be stopped and a halt should be made in their production. One lesson, the doctors have learnt in this War, is; to use drugs manufactured in India, whenever they are reliable. So, the manufacturers can be assured of the practitioners' patronage.

Subjects needing immediate attention are:—

1. Improvement of village communications and transport.
2. Medical planning like English Health Insurance.
3. Granting of free Purchase license to Doctors.
4. Employing the Excise Inspector to help Doctors in getting medicines.
5. Till Departments dealing with the Doctors are managed by Doctor Officers, framing of an Adfisory Committee of two general practitioners and the Excise Commissioner, to control notices to be served and prosecutions to be launched against doctors.
6. Rationalisation of Quinine rules. Supply of Quinine, Cinchona and Synthetic anti-malarials to all doctors.
7. Clarification of certification rules by the Medical Council, if necessary, by amending the Bengal Medical Act 1914, which may be unsuitable in 1944.
8. Help to Indian Manufacturers by raw materials.
9. Wartime suspension of Patent-rights of important drugs of which there is short supply.
10. Formation of a Committee of experts to advise the Manufacturers to facilitate production of useful remedies and to weed out therapeutically useless preparations.
11. More Medical Colleges, Cheap Medical education, Cheap Post-Graduate training.

With all the emphasis, I can command, I exhort you all in the immortal words,

Arise, Awake and stop only after attaining the highest. Strengthen your organisation and your organisation will strengthen you. May God bless our efforts and forgive our sins of error and omission.

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Presidential Address by J. C. De, M.B., M.R.C.P. (Lond.), Lt. Col. I.M.S. (Retd.) held on November 26, 1944:

Brother Members of the Association and Delegates of the Conference—

At the outset I express to the Executive Committee of the Bengal Provincial Branch of the Indian Medical Association my cordial thanks for the honour they have done me in inviting me to preside over the deliberations of this conference. It is a matter of sincere pleasure for me that I am privileged to attend this conference and to meet many friends whom I have not had the pleasure of meeting for many years since gone by.

The Sixth Session of the Bengal Provincial Medical Conference meets amidst the throes of the second World War which for the sixth year in succession has rocked, convulsed and

held sway over the planet we dwell in, making the pathway of mankind dark with countless terrors and high with terrific enterprise. And barely three decades ago, the first World War had swept the earth from end to end, spreading death, torment and destruction as the world had not known before. Under the tremendous impact of the immense clashes and tumults, a revolutionary change of scale of human affairs is taking place with concurrent revolution in medical ideas and prospects a swift activation of social conscience and lay thought in the direction of legislation to promote a new conception of positive health and efficiency.

An outstanding contribution in this behalf is the Beveridge Report and its assumptions which contemplate the establishment of a comprehensive National Health Service, curative and preventive, covering the people of the British Isles as a whole. Further, the sheme provides not only for medical treatment in all its forms but includes also rehabilitation or treatment for restoration of function till maximum possible earning capacity is regained. The British Government have accepted in principle the assumptions of the Beveridge Report, in fulfilment of article five of the Atlantic Charter, and stand committed to a far-reaching measure of social advance, namely, the creation of a National Health Service in order to ensure that all, irrespective of age, sex or occupation, shall have equal opportunities to benefit from the best and most upto-date medical and allied services available. The scheme is estimated to cost £. 132 million a year. The adoption in principle of the Beveridge Report and its assumptions mean, that the British Government have done with yesterday's idea of medical and social services being intended for the necessitous poor only, either as an act of supererogation or a device to take the revolutionary edge of their discontent brought about by material privation sickness and undernourishment and now recognise, that these services appertain to essential functions incumbent on any good government to maintain and promote. The ultimate responsibility for the adequacy and efficiency of the Medical Services and provisions of the people, the Government admit, must rest on the State machinery working in collaboration and consultation with the voluntary agencies.

The acceptance of the principle underlying the Beveridge Report that every member of the community has a natural right to the benefits of up-to-date medical and allied services, the ultimate responsibility for which must rest on Government machinery, establishes these services on the same plane as that of maintenance of 'law and order' namely, that of a primary function, and dispels any notion of their being mere tokens or counters of the objective moral order of the State, and indices of its charitableness.

Now, turning to India, specially to Bengal and Bihar, one sees a grim picture of destitution, weakening of resistance to disease through under-nourishment, widespread prevalance of Malaria, Kala-azar, epidemics of Small-pox, Cholera, tragic distresses, despairs, and deaths, calamities which are not here alone, but which she shares with China and other war-ravaged countries. The havoc wrought by last year's famine, left areas of Bengal in an impoverished state and in its wake, a sorry tale of ruin, desolation, abandonment and death. Even now some wander about towns and cities in actual immediate need of food. Since the beginning of the year, epidemics of Malaria and Cholera have ravaged Bihar; between January and July over two lakhs of persons are reported to have died of these epidemics in the Tirhut Division alone. And while Bihar was thus paying its toll of death to pestilence, Small-pox in an epidemic form prevailed in Calcutta for 32 consecutive weeks, and Small-pox and Cholera raged over several districts in Bengal. And now a fierce outbreak of Malaria holds large areas in its grip, exacting a high toll on human lives. Accurate figures of morbidity and mortality are of course not available in the circumstances of rural areas; large tracts in the country have scarcely any medical facilities and are remote from any any health centres, and the Public Health Staff of District Boards are generally too inadequate to visit, take note of and keep an eye on the health conditions of these out-of-the-way areas. Health statistics from these tracts are naturally incomplete, meagre and unreliable. Anti-malarial drugs are, not uncommonly, either, unavailable or very difficult to come by.

With regard to availability of anti-malarial drugs, Bengal Government announced recently that free distribution of Quinine, Cinchona febrifuge and Mepacrine in 1943 increased by more than 800 p.c., 100 p.c. and 600 p.c. respectively, over the figures of 1942, although the number of patients who attended dispensaries and hospitals increased by only 20 p.c. during the period. During the first 6 months of 1944, the free distribution of these anti-malarial drugs increased by a further 50 p.c., 250 p.c. and 1700 p.c. respectively over the figures of 1943, although corresponding increase of malaria patients was only about 6 per cent. Notwithstanding distribution of anti-malarial drugs on a much larger scale than the year before, the malaria situation this year is admitted to be serious. It has been reported that in East Bengal there was hardly a home untouched by Malaria, and it was said to be prevalent in an epidemic form with a high mortality rate, especially in the eastern areas of the Mymensingh District. The president of the Bengal Medical Relief Co-ordination Committee stated recently in a Press Communique that supplies of Quinine to Medical Relief Units in Bengal had been meagre and several Units had to close down periodically till fresh supplies could be obtained. As anti-malarial drugs have been available in much larger quantities this year than was the case last year, it follows that the distributing arrangements are not satisfactory and the drugs are not reaching those who needed them most. Lately, I had occasion to visit a somewhat backward area—though not so very far from Calcutta of Rural Bengal. Malaria was rife, there was no dispensary within five miles of the locality and it had no qualified man in charge, anti-malarial drugs were practically unavailable, a five grain dose of quinine mixture cost eight annas, a price hardly within the means of the average villager. I was told further that Mepacrine was unobtainable even from the District Headquarters, situated 24 miles away. This is probably also a mirror picture of many other rural areas in Bengal. It seems more than probable that many thousands have to go without treatment and numbers perish directly from this cause and of those who escape not a few succumb to intercurrent complications. As regards the physique of inhabitants of the area, I visited, a common sight was of wasted figures with rotund bellies accentuating the general haggardness of appearance; many were too weak physically to cultivate their fields unaided and made use of imported Santhal labour to help them out. One wonders, if Mepacrine or Quinacrine can not be sold, if sufficient quantities are available, through the Post-offices, as Quinine used to be sold in pre war days, and as for distribution, the same can not be carried out through the agency of village Pathsalas, Makhtabs, Schools, Heads of village Panchayets, in addition to Union Board Dispensaries? Notwithstanding the employment of all those agencies, the problem of the drugs finding their way to the sick men proper would still remain unless an adequate system of frequent inspection, which would also take note of the state of prevalence of the disease in affected areas, is instituted. The provision of a complete anti-malaria service may prove a large undertaking under the present circumstances, but the necessity of putting several anti-malaria brigades into operation in Bengal is great, nay urgent. A vigorous anti-malaria campaign is the supreme task of the day. In the matter of preventive work in the area I was referring to, vaccination was carried out sporadically, or not at all, and as for a visit of an officer of Health, if any had taken place, had occurred at such a remote period as to have acquired a legendary character.

No doubt, many of you present here, could recount other instances and even more tragic ones of inadequacies, defects and dangers with which the present state of organization of the Health Services cannot cope sufficiently than those I encountered during my brief visit. However, a point which emerges here for consideration relates to the Medical Profession in Bengal, a body of men who having their fingers on the pulse of the health-state of the country may be expected first to become aware if anything were to go seriously wrong with it, and to take the initiative to stir into action such defensive forces as exist and measures as may be available to combat the peril betokened by the danger signal. Now the question may be asked what effective part has the Medical Profession played in this connection? The answer indubitably is—'much', but, has it been commensurate with the opportunities, which the profession as a body enjoys? Has it remained apathetic on occasions when it should have reacted with vigour? Do the efforts made or part played satisfy reasonable public expectations? This is a matter to which I will revert later in the

course of this address; meanwhile I will content myself with adverting to certain other aspects of the case that have an important bearing on the point at issue. One has to remember in this connection that the Doctor lives also in a world of financial competition, with a wife to maintain and children to educate, and not too few are rarely able to relax from the worry of earning a living made up of small fees and he can hardly afford to be more altruistic than his neighbour. And as for those, who work in salaried appointments, under Health Boards, Corporations or what not, they not infrequently are regarded as less than the dust beneath the chariot wheels of chiefs, deputies, conferences and committees, in whom is concentrated the power urge. To such Bodies the employee doctor is only a salary-slave to be taken notice of in the interest of display of power than in the genuine concern of getting the work done.

Now what is the remedy? To find an appropriate one, one should try to take cognizance of the problem, to which a remedy is being sought, as nearly, as a whole, as possible. Take for instance, the prevention of malaria; this would require much else besides distribution of anti-malarial drugs and employment of anti-mosquito measures. Drainage, spraying with larvicides, promotion of larva's natural enemies, mosquito-proofing of homes, education in anti-malarial measures, establishment of anti-malaria bureaus, surveys and controls, prevention of infection of mosquitoes by appropriate drugs, and curative treatment, all on an extensive scale. Anti-malaria operations, on such a basis, will reduce but will not eliminate Malaria and it is problematical, if the reduction so attained would contain the infection within safety limits and there would still remain the threat of periodical outbreaks in a virulent epidemic form. This would be the case where whole populations, spread over large country areas are concerned as opposed to limited classes of people operating over more circumscribed zones. For whole areas and peoples, comprehensive measures to improve the general economic condition, bonnification of land by employment of better agricultural methods, improved drainage, irrigation, better housing, prevention of malnutrition, in other words, promotion of the economic well-being of the people as a whole, would have to find a prominent place in the plan of any comprehensive anti-malaria campaign because of their significant effect in combating malaria. If this is the position in regard to the eradication of Malaria alone, what would be the requirements where an all-embracing objective, namely, the attainment of positive health for the people as a whole is the goal. No Syndicate or League, however rich and powerful, can tackle adequately such a monumental task; in fact for effectiveness in public health, there is need for not only national but international collaboration.

Now let me turn aside for a moment to quote from the Memorandum drawn up by the Representative Committee of the British Medical Association in which the problems relative to health are fully and clearly stated, and which are apposite in relation to the point we are considering. It says:—

"(1) The health of the people depends primarily upon the social and environmental conditions under which they live and work, upon security against fear and want, upon nutritional standards, upon educational facilities and upon facilities for exercise and leisure;

"(2) The efficiency of a country's medical services, both preventive and curative, depends upon the available medical and scientific knowledge, upon the extent and character of medical education and upon the absence of any barriers that impede the utilization of these services."

From the foregoing considerations it follows that only a comprehensive scheme of a National Health Service alone can meet adequately the health needs of the people and that the institution and maintenance of such a service can only be undertaken successfully by the State, making full use of its powerful resources and working in integration and confluence with the medical profession. Towards the attainment of this object, a necessary first step is the adoption, by Central and Provincial Governments, of the principles of the Beveridge Scheme and assumption of responsibility for introduction, development and maintenance of a comprehensive National Health Service for India on the lines advocated in the Beveridge Report. If this were done there would come about a complete re-orientation of official outlook in regard to these services which would be translated from the category of benignant functions of the State to that of cardinal functions incumbent upon the Government. There would follow reorganisation not only at the bottom but also at the top. Health would get a Ministry all to itself unencumbered by the distinctive problems of education and of land at the Centre and dissimilar problems of Local Self Government in the provinces. It may be argued that the problems of education, land and of local self-government are cognate to those of health, but so are the problems of many other departments of State activities such as Communication & Works, Agriculture, Housing, Supplies, Co-operative Credit, Labour and Industries. What the country requires is a single Ministry to wage war against disease and to build up health, the war to be not just a plain war, but a total war in furtheance of which the total resources of the State will be mobilised and marshalled to ensure victory. It is only under such inclusive conditions and governance that any significant improvement in the health of the people as a whole can be expected and derived.

The foregoing considerations call for a brief survey of a new factor which bids fair to play a vital role in relation to health and social welfare. It relates to the birth of the concept of social medicine or medicine activated in its aetiological enquiries by social conscience as well as scientific intention. The dawning of this concept has given a fresh impetus to public health movement comparable in value and importance to the renaissance. Preventive Medicine had hitherto lacked a necessary human touch owing to too exclusive an outlook in holding health and sanitation as practically synonymous. The new awakening lays stress on the importance of personal hygiene and health education. It is this new consciousness which takes full account of the individual in relation to his circumstances, environmental and social, that has given the new teaching its intimate human appeal hitherto lacking in the too impersonal view-point of preventive medicine, which bred an exclusive outlook, and by a natural reaction, distrust. The work of preventive medicine had, therefore, to be carried on, not infrequently, in an atmosphere of passive resistance, if not active hostility, which to an appreciable extent militated against and rendered ineffective its efforts to guard public health. The new concept dissolves all these mental resistances by its human appeal; its root principle, the study of man in his environment, his family, his house, his food and his work, has culminated in the establishment of such social services as maternity and infant welfare, school, industrial and tuberculosis medical services, nutritional programme for the people, rehabilitation, and approach through the psychological as opposed to physical aspect, to disease. Moreover, the establishment of a department of social and preventive medicine in all medical schools, as now advocated by the Royal College of Physicians, London, will give the training of future doctors new codes of thought and new modes of conduct in accord with the essential humanism of Medicine, but which has not hitherto found as prominent a place as could be desired in the Medical Curriculum. Further, the new learning would promote a greater understranding between medical and social workers and the general public amongst whom the doctors work is laid, a a greater understanding of social factors in contributing to ill health, and a growing appreciation of the need of a positive attitude towards health as something more than the mere absence of sikness. The creation of a Chair of Social Medicine at Oxford by the Nuffield Trust is a first step in this direction.

The above consideration introduces a matter of world-wide concern at the present time, a matter of special concern to all medical men in every clinic, namely, food and feeding. Last year we saw the ugliness, the misery, the complete degradation of human beings, man, woman and child, in want of food, came to know of thousands who clutched convulsively to maintain their precarious hold on the margin of subsistence and of thousand others who lost that hold and slid silently beyond into the great unknown, where, one may hope, they found the peace they knew not on earth. This grim picture of destitution and starvation is by no means confined to India; it is now a world-phenomenon outside United Kingdom, British Dominions and countries in the New World. Even in ordinary times there are millions in India, China and it is reported in Africa, who have never known anything but semi-starvation. Whole tracts of War-devastated areas of Asia and Europe are now despoiled of food resources. This is the first task of the United Nations

Relief and Rehabilitation Administration (UNRRA) to combat. Its operations may possibly extend to parts of India, but primarily she will have to depend on her own resources, reinforced by such aid as the Allies may be able to render her, to tide her over critical periods. It will of course be the duty of Government to prevent sheer starvation, to effect price stabilisation within the purchasing power of common people; and it will be the duty of the medical profession to devise ways and means how to combat any threats of pestilence, how best to check the increasing debility and lowered resistance to disease of the people, how best to improve the quality of human nutrition and how to restrain and defeat the sordid interests that would degrade human food and poison and enfeeble us.

There is another type of unimaginative self-seeking, which is unfortunately so much to the fore now-a-days and a sad reflection on the complex tortuosities of the times, to which I must refer here. I allude to the sinister hoarding and profiteering in drugs, adulteration and misbranding. This is a matter generally taken to be of greater concern to the medical profession than even food. All of us at some time or other have met with or heard of instances of hoarding and profiteering in essential drugs and some have been actually victimized by it, but by far the largest victims of these sly and base dealings have been the sick. Countervailing forces are as yet undernable and ineffective. The public expect the Medical Profession to take a vigorous part in the campaign against such anti-social conduct and this is no unreasonable expectation. Perhaps the Profession tried to play its part, perhaps it came up against formidable obstacles which it could not surmount and so lapsed into a self-righteous apathy? Unfortunately, the rank of medical men, who lead public opinion, is too thin to constitute a solid front. The phalanx is conspicuously made up of men from the Bar and Educational organisations of the country. Possibly our lack of breadth and depth in basic education is a root cause! The minimum qualification for entering upon a course of study for the Bar is a degree in the Arts or the Sciences. The rank and file of medical men step off for medical studies from lower rungs in the educational ladder. The existing practice has so far justified itself by producing an increasing number of men of technical ability and technical conscientiousness but it has produced only a modicum of outstanding leaders. The preliminary qualification for entering upon a course of medical studies, as it stands at present, can hardly be expected to make things better in this respect in future. The report of the inter-departmental Committee on Medical Schools in the United Kingdom, which sat for two years under the Chairmanship of Sir William Goodenough and whose Report has lately been published, furnishes significant pointers in this direction. Medical Education, they conclude is the essential foundation of any good medical service, and since every member of the community shares the benefits of Medical Science, all, regardless of wealth or status, should consider it an obligation to further medical education. The Report further stresses that a medical student must have a University education if he is to acquire the wide interests and disciplined mind which medicine demands; and further, that at present many students do not receive such an education. They recommend that in future only medical schools, which are an integral part of Universities, should undertake the training of undergraduate medical students. Consistently with this principle the report says, four existing schools, including the famous School of Medicine of the Royal Colleges in Edinburgh, which have served a useful purpose in the past, can no longer provide an adequately high standard of training and should cease to train students. Incidentally they state, and here is a point which the Public and the Medical Profession should ponder over, that medical education can no longer be regarded as merely incidental to the hospital service.

Hitherto the emphasis in medical education has mainly been towards turning out sickness experts and less on health matters. With the introduction of Social Medicine in the Curriculum, this truncated attitude towards health may be expected to disappear in course of time.

The second World War has probably entered upon its concluding phase now. The words 'reconstruction' and 'rehabilitation' colour the lives and sustain the hopes of the distressed multitude everywhere. But, in regard to medical services, large areas in the country are likely to remain without the aid of Medical Sicence, at least so far as diagnostic and remedial medicine are concerned, for many years to come. And the condition may remain thus in perpetuity unless Government accept the fundamental concept of the Beveridge Report and embark on a comprehensive scheme of National Health Service for India. In moving his motion on the Beveridge Report in the House of Commons, Mr. Arthur Greenwood said that no document within living memory had made such a powerful impression, or stirred such hopes in the mind of the British people. Surely the time has come when the benefits, of Medical Science for the people can no longer be looked upon as a charity affair, a by-product of humanitarianism, or a patriarchal benevolent activity of the Government, but should be regarded as a vital function of the State, organised on a basis of instant alertness to the call of duty, as in the case of the Fire-Brigade, or troops under arms.

The organisation for India of a National Health Service on a comprehensive scale as envisaged in the Beveridge Scheme is, however, a matter of long term policy. But the Government's duty is to make improvements within its power and one of the reforms, to which the Government can bend its energies soon after this war, is to see that the benefits of curative medicine—which are not negligible—are distributed more widely and effectively in rural areas.

Now Gentlemen, I do not deal with any of our internal concerns, problems and difficulties, which no doubt will find a due place in the business of this conference. But, before I conclude, I think I should utter a word of caution, which may prove useful in the abundantly hopeful days that may follow immediately after the conclusion of the war. In 1918 people thought the millenium had set in; tragic thoughts they proved twenty years later. The end of this war may not see the return of the Golden Age any more than did the end of the last. For years to come, the intelligent Head-man of the village will have to be the Home-doctor of his unit. Meanwhile, the Medical Profession will always have the task of consoling and comforting those in the depths of misery and despair.

Finally, let us hope and pray that the end of the second World War will not see the sowing of the seeds of a third World War, more terrible and devastating in character than the two that had preceded it, and that the Medical Profession will not fail to live up to its fine tradition of service on behalf of humanity.

Resolutions passed at the Sixth Bengal Provincial Medical Conference, Howrah, 1944.

1. This Conference places on record its deep sense of sorrow and loss at the sad demise of the following members and conveys its heartfelt condolence to the bereaved families:—

1. Dr. Prafulla Ch. Chakraborty (Calcutta). 2. Dr. H. C. Majumdar (Calcutta). 3. Dr. Jitendra Nath Majumdar (Calcutta). 4. Dr. J. C. Aich (Calcutta). 5. Dr. Atul Krishna Rakshit (Calcutta). 6. Kabiraj Gana Nath Sen Saraswati (Calcutta). 7. Dr. Arun Kumar Sen (Calcutta). 8. Dr. Prafulla Kumar Mukherjee (Calcutta). 9. Dr. Nakuleswar Sen (Calcutta). 10. Dr. Bhusan Chandra Sadhu (Sitarampur). 11. Dr. Hari Pada De (Sitarampur). 12. Dr. Nalin Behari Aich (Barrackpore). 13. Dr. Jagadish Chandra Chatterjee (Khulna). 14. Dr. Dhirendra Nath Mitter (Satgachia-Kalna). 15. Dr. Jagadish Ch. Lahiri (Rangpur). 16. Dr. Jnankrishna Hazra, (Mundalika-Hooghly). 17. Dr. Gosto Behari Banerjee (Midnapore). 18. Dr. Surendranath Ghosh (Howrah). 19. Dr. Pankaj Chatterjee (Bankura).

2. This Conference draws the attention of the Govt. to the deplorable effect of the operation of the D. I. Act on the Municipal Acts of Bengal and Calcutta as it deprives the people of the province of the only check upon the sale of unwholesome articles of food. The D. I. Act apparently supersedes the Municipal Acts and comes into conflict with the spirit and rationality of law to be useful in the service of humanity, as complaint against foodstuffs, sold in ration shops, have been continuous and insistent and stomach and bowel diseases and jaundice are widely prevalent in the rationed areas.

This Conference, therefore, urges upon the Government not to permit the D. I. Act to supersede the Municipal in respect of public health activities but to allow the Municipal Acts a free and full play in ensuring sanitation and healthy living of the people.

3. This Conference expresses its opinion that the Govt. of India should create a National Health Service in order to ensures that here in India all people including industrial, agri-

cultural and other workers and labourers may have equal opportunities to benefit from Medical and allied Services rendered possible by up-to-date discoveries of science irrespective of social and economic inequalities.

So far, the nation's health and the various medical and public health problems have not attracted adequate attention from the Central and Provincial Governments.

The Medical & Public Health Departments of the Government and the Local Bodies as well as the piecemeal war-time measures adopted in these departments have not proved satisfactory. This Conference urges upon the Central and Provincial Governments to adopt the preliminary report on the outlines of post-war health planning of the Bengal Provincial Branch of the Indian Medical Association (*J. Indian M. A.* Sept., 1943 and *C.M.J.* July 1943) and launch the scheme on the basis of the first five-year plan, from the next financial year.

This Conference is further of opinion that the State must be held responsible for the protection of the health of the people and must aim at providing one registered medical practitioner, recognised by the Provincial Medical Councils, for at least every 2,000 members of the population, within a reasonable measure of time.

4. This Conference views with dismay the situation arising out of the entire national health of rural Bengal being shattered due to the last famine and its consequent epidemics resulting in premature death of more than 50 lacs of people—mostly from preventible and curable diseases.

Even at the present moment, Bengal is in the grip of Malaria and about 2 crores of people have been suffering from various epidemics in different parts of Bengal including the eastern areas of Calcutta. The village economic condition is straitened to the lamentable limit. Preventive and curative measures are extremely inadequate and in many places 'non est'.

Quinine and anti-malarial drugs are difficult to be obtained or in some places not available at all. This Conference is of opinion that therefore the Govt. should take immediate steps to arrange so that Mepacrine or Quinacrine is available and kept for sale as Quinine used to be sold in pre-war days through the agency of village pathsalas, Mukhtabs, Schools, Heads of village Panchayats in addition to Post Offices and Union Board Dispensaries and for free distribution in badly affected areas through bonafide relief organisations.

This Conference urges upon the Government to give effect to the Rural Medical & Public Health Scheme of the Bengal Provincial Branch of the I.M.A. and put it into immediate operation in badly affected rural areas throughout the province of Bengal.

This Conference also urges upon the people of Bengal to organise public opinion and to demand of the Govt. a prompt and effective response to actualise the scheme before Bengal rural health becomes altogether incapable of tilling lands and growing and producing jute and essential raw materials for other industries.

5. This Conference draws the pointed attention of all concerned to the deplorable condition of the drains, roads and outlying unoccupied localities in the eastern areas of Calcutta particularly in the Wards 18, 19, 28 and 29. The drains are silted up and are constantly emitting an intolerable filthy exhalation. The small ponds and puddles are covered with algae, water hyacinth, animal excreta and decomposed vegetable matter all combining to make these veritably putrefying cesspools, and all contributing to the prevalence of Malaria and other epidemics in the localities which are taking a heavy toll on the lives of the people.

This Conference is of opinion that this state of affairs is a permanent blot on the efficiency of the Calcutta Municipality and urges on the Corporation and the Govt. and the public to see that by their joint action the sanitation of the locality may be made worthy of human habitation.

6. This Conference, while welcoming the Anti-Venereal Disease Drive, sponsored by the Government of Bengal, which was a long felt want, urges upon the Govt. not to limit its operation within Calcutta but to open more clinics, preventive and curative, all over Bengal, particularly in the industrial and port areas of the province. There is no two opinion that these diseases have been eating away the vitals of our toiling masses and their eradication will be a great service to the country.

7. This Conference expresses its opinion and urges upon the Central and Provincial Governments that the time has come when single and separate Ministries of Health should be created both in the Central and Provincial Governments in charge of the portfolio of medicine and public health.

8. This Conference urges upon the Government of Bengal to abolish the present system of dual type of medical education and to introduce a uniform standard of medical education as prescribed by the Indian Medical Council.

9. *Compilation of an Indian Pharmacopoeia:* This Conference is of the opinion that it should be one of the functions of the Medical Council of India to cause to be published under their direction a Book containing a list of medicines and compounds, and the manner of preparing them, together with the true weights and measures by which they are to be prepared and mixed, and containing such other matter and things relating thereto as the Council shall think fit to be called "The Indian Pharmacopoeia" and that it should also be the function of the said Council to cause to be altered, amended and republished, such Pharmacopoeia and as often as they shall deem it necessary.

This Conference is further of opinion that the Indian Medical Council Act 1933 should be so amended as to provide for the above as one of the functions of the Medical Council of India.

10. This Conference requests the Bengal Provincial Council of the Indian Medical Association to move for the formation of "A Council on Pharmacy and Chemistry" by the Central Council, Indian Medical Association, primarily with the object of protecting the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with proprietary medicinal articles, and it should also be the function of the Council to advise the medical profession concerning the status of all medicinal articles and to publish reports on claimed advances in the use of drugs, and to elaborate standards for the control and identity of drugs that are introduced into materia medica.

The term "proprietary articles" shall mean any chemical, drug or similar preparation used in the treatment of diseases, if such article is protected against free competition, as to name, product, composition or process of manufacture, by secrecy, patent or copyright, or by any other means.

11. This Conference reiterates its insistent demand on the Calcutta University and the Government for adequate Post Graduate teaching in Medicine and notes with deepest regret the undue dilatoriness and half-heartedness on the part of the University and requests the authorities to take an immediate initiative in the matter.

This Conference is also of opinion that the regulations as lately framed by the University in admitting I.Sc. passed candidates directly into the Preclinical period of studies is unsatisfactory as the training actually imparted and knowledge acquired by the candidates fall short of the standard needed for the medical cirriculum and insists that a Medical I.Sc. course as exists in many other Universities should be created in order to improve the standard of medical education in this province.

This Conference notes with regret the actual situation prevailing here at present with respect to medical text books most of which are imported from foreign countries and many of which are almost found to be unavailable in the market, and requests the University to appoint a Medical Text Book Committee to prepare suitable medical text books for our medical students.

12. In view of the pressing and long felt want of the public, this Conference urges upon the Government that it is high time that specialised hospitals should be started in Calcutta and premier cities of India for the admission and treatment of (*i*) Tuberculosis, (*ii*) Diseases of Children, (*iii*) Mental Diseases, and (*iv*) for Infectious Diseases exclusively. It is impossible to tackle with infectious diseases which are a perpetual problem in most of the populous cities in India and often thwart public health measures for want of specialized hospitals of suitable capacity.

13. This Conference resolves that in order to help the suffering public, suitable arrangements be made so as to help the medical practitioners to (*i*) get regular supplies of quinine and other anti-malarial drugs, (*ii*) get free purchasers' license under the Drugs Control Order, 1943 and (*iii*) a more liberal supply of petrol and motor accessories, as promptly as possible, considering that medical aid is an essential service, which medical practitioners render to the public.

XIV PUNJAB PROVINCIAL MEDICAL CONFERENCE

The Fourteenth Punjab Provincial Medical Conference opened at Sargodha in the specious lawns of the palatial residence of the Hon'ble Malik Khizir Hyat Khan Tiwana, the Premier of the Punjab on 12-11-44. The inauguration was performed by Chowdhari Mian Nair Ahmad, Deputy Commissioner. Delegates came from all over the province, from Lahore, Amritsar, Batala, Ludhiana, Lyalpore and the distant frontier province. It was indeed a gathering of distinguished medical men from all over the province, and the Sargodha Medicos had turned out in full numbers under the inspiring leadership of Dr. R. S. Sharma, Civil Surgeon, the Chairman and Dr. A. N. Gulatia, the Secretary of the Reception Committee. After the addressess of the Chairman of the Reception Committee and the President, Dr. B. L. Kapur, M.D., of Lahore, which were both highly appreciated, office-bearers for the year were elected. A number of important scientific papers were read and discussed. A number of important resolutions were passed on matters concerning the welfare of the profession. The Sargodha medical men gave a remarkable evidence of their hospitality in providing excellent meals for the delegates in the spacious dining hall of the residence of the premier which had been so kindly lent by him for the occasion.

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Presidential Address delivered by Dr. Malik Basheshar Lal Kapur, M.D. (Berlin) at the 14th Punjab Provincial Medical Conference:—

Mr. Chairman, Ladies and Gentlemen,—I thank you for the honour you have conferred upon me in electing me the president of the Provincial Branch of your Association. It infuses a spirit of great pride in me. But I feel that the responsibility is great. The history of the world is undergoing a catastrophe change and everything is so unsettled. The problems before us are so many that I feel so diffident in occupying this chair. But I am encouraged by the fact that you have been kind enough in extending your kind help and co-operation to my predecessors, and you would offer same to me. So, inspite of my shortcomings I shall try to do my best to enhance the prestige of the Association and the profession.

Before I proceed further I would like you to join me in deploring the loss of the doctor, Waryam Singh Tibb of Rawalpindi. This association owes to him a debt of gratitude as he took a prominent part and keen interest in the affairs of the association. Those of us who were in close contact with him admired not only his professional attainments but his genial and quiet temperament.

Resolutions

You would pardon me when I point out that lot of stress is laid on passing resolutions year after year. But very little has been achieved so far. Personally I don't believe in begging favours. God helps those who help themselves. Let us try to raise ourselves to a still higher standard and by this there would be an automatic solution to so many of our problems.

Membership

On consulting the register of the Punjab Medical Faculty we find that the number of registered medical practitioners is 3,500. I can well believe that 500 of them are practising outside the Punjab. Out of the rest only 589 are our members. This number is very small. Our foremost duty should be to enrol all the members of the profession. If every one of us took a vow today to enlist 10 new members, a lot can be achieved and if this could be repeated every year not a single practitioner would remain outside our fold. Then the banner of the Indian Medical Association would be seen flying not only in the district towns of our province but everywhere, where there is a practitioner. On this occasion I would appeal to the worthy colleagues practising in the Punjab states to join us at their earliest, and not wait for any pressure from our Secretaries or members.

Medical Associations

There are some other medical associations existing in our country. But Ladies and Gentlemen, there can be only one representative body for the medical profession in India, and it can only be the Indian Medical Association. It does not recognise any creeds inside the association and would not allow any water tight compartments to exist outside it. Even in the Medical service of the military department the Government had to abolish the ranks of Jamadar, Subedar, etc., and replace them by Lieutenant, Captain, Major and Colonel also for our licentiate brothers. We feel indebted to Government for acceding to this request of ours. Thereby I would not say that the All-India Licentiates Association is not doing god work. But I can assure our Licentiate brothers that their interests are quite safe with the Indian Medical Association. It would not be worth the while for them to maintain a separate association. I would request the licentiate brothers to lose no time in coming under one commonfold of the Medical profession.

Preventive Aspects of Medicine

It is said that prevention is better than cure. If it is true the profession should realise its duties. The epidemics of cholera have not been absolutely checked. Typhoid, malaria, tuberculosis and other infectious diseases are raging in the country inspite of us. Sanitation is at its lowest ebb. The water arrangements are very bad. No satisfactory sewerage system exists in the province. The food problem has become very acute. The rationing system has not improved the supply of wheat, atta and sugar. It is true that everything is in the experimental stage and we are unfortunately the targets of this so-called scientific investigation of the food problems of the rationing authorities. The housing arrangements are inadequate. The old town planning is most defective. The maternity and child welfare arrangements are far from satisfactory. The few lady workers of the province cannot achieve very much. Considering the above, I must say that as members of the noble profession, we have done very little in this direction. What to talk of looking after the folk our own sense of cleanliness is lost by living in filth.

The Public Health Department

With all that, I would not say that the Public Health Authorities are doing nothing. They put in lot of energies and try to do their level best. But the amount of work is so much that this department alone cannot cope with it. The trouble is that everything is in such a disorganised state that one does not know where to begin and where to end. But it is however surprising to me that the cantonments look so different from the civil station, although the same people live in both of them.

Controlling Power

The controlling power in the civil lines is with the lay people who understand next to nothing about the affairs of preventive medicine. It would be more useful both to the public as well as to the Government if nominees of the Medical Associations were to be represented on the Corporations and the Legislative Assemblies. In my opinion there should be a separate ministerial department of the Government with a medical man incharge of this portfolio.

Milk

The supply of milk is inadequate. Good milk is not available even at an exorbitant price. For this purpose one should have arrangement for his own cow. The price of the available milk is so high that the poor cannot touch it and the middle class can afford it only with a very great difficulty. Thereby milk is an important diet of the infirm, growing babies and expectant mothers and also of the most of the population of the country who are vegetarian throughout their life. This is the only source of the animal protein and fats and this safeguards against tuberculosis and infectious diseases.

It is very strange that in a country like England where the cattle are used also as eatable commodities, the milk supply is so adequate even in duration of war.

In our country there is a very big organisation of the so-called Gaushalas. Two pies to a rupee of a businessman go as charity towards that fund. If this is state of affair of the milk in the country inspite of this big charity and the organisation, then there is something wrong in the policy. Would the profession not take it over to itself to go into the matter?

The cattle are badly looked after. Little attention is paid to their breed. Inspite of the religious feelings for the cow, there is hardly a grazing ground earmarked for the cattle. In these days their slaughter is going on on a large scale, and if its progress remains the same, milk and ghee would disappear from the commodities of our food. Would the Government look into the matter?

Maternity

Maternity is in the hands of the illiterate dais. They have hardly any notion of cleanliness. Their knowledge of natal period is very primitive. The ante and post natal care is unknown to them. The people call them only when needed. So the nutritional diseases, eclampsia and other complications of pregnancy are on the increase. In most of the cases the babies are born without any external help, but there are no provisions to attend on them. But if anything of importance can be done it is only in the ante-natal period. So it is up to the profession to teach the public to send their expectant womenfolk to the ante-natal clinics, which I must admit, are very few in number. The question of increasing the number does not arise because even the existing ones have very little to do. The education of the public in this direction is very essential. Instead of training more dais in the country the training of proper midwives be encouraged, so that we have a better maternity service.

The health visitors should do the visiting of various houses and should go into the matter of cleanliness. They should educate the people how to safeguard against infectious diseases, especially tuberculosis.

Child Welfare

Child of today is a man of tomorrow. It is upto us to see that it grows to be a useful, strong and healthy citizen. The physical and intellectual development of the growing babies should be well looked after. The children are brought up in a very strange way. There is no fixed time for feeding them. They get mother's milk as soon as they begin to cry. They remain rather sickly and have awkward habits. Thousands of babies die at an early age and quite a number become blind or maimed for want of the elementary rules of hygiene and sanitation on the part of their parents. For the sake of better nationbuilding we urge upon the Government to open separate child welfare centres with properly qualified staff so that they can educate the people on a large scale.

Most of the large cities in India are built over a century ago and as such they are very congested. Every inch of whatever open space has been available is being utilised for building new houses and no open spaces are left for the children to play about. They keep on playing in dirty streets with the gutters full of filth and refuse. It is disgraceful to see the gutters even within big city of Lahore filled with dirt and mud.

School Children

Some compulsory examinations of the school children have been started lately but are an a very low scale and done quite haphazardly. There are only part-time doctors who examine the children yearly. Would it be expecting too much from the school authorities, if we asked them to engage a whole time medical officer and pay him well so that he could look to the sanitation of the school and keep a constant eye on the health of the children and at the same time teach Physiology and Hygiene, whose elementary knowledge is, in my opinion, essential for all the students.

Sewerage System

One of the most important problems of the preventive medicine is the disposal of refuse and night soil. The present system of its disposal is most unsatisfactory. If the machinery for the working of the sewerage system shall not be available during the war. I think the authorities should with the advancing times and conditions devise some simple sewerage system, which would be introduced even during the days of war so that we could do away with the sweepers. It looks a waste of man-power to earmark a certain class of people for a work of the type when it could be easily done without them.

Cinema Halls and Places of Amusement

The cinema halls and the places of amusement were originally intended to be places of relaxation and recreation for the public, but instead of that they play havoc in bringing on diseases. These halls are so stuffy that one can hardly breathe there. You can nearly cut the air inside these halls with scissors and the exhaust fans never work. They are only ornamental. There is overcrowding to the extreme limit. The normal sitting arrangements are always exceeded by putting extra chairs and benches. The sanitation on the whole is defective.

The Indian Medical Association has always taken an exception to these but we are helpless in the matter and often wonder as to why the public authorities keep a closed eye at this disgraceful state of affairs in these halls.

I take the liberty to bring it to the notice of cinema hall magnates and think that it would stand to their credit to improve the present unsatisfactory conditions existing in these places of amusement.

Curative Aspects of Medicine

As far as the curative side of the Medical Science is concerned I have to admit that some facilities are provided in the Urban Areas whereas the mofussil is absolutely neglected. What to talk of a doctor, there is no hakim or vaid to be found in those areas and the people die unattended. There is definitely a dearth of doctors. We have one doctor for 9000 people in our country, whereas in England the ratio is 1:400 I should not make comparison because east is east and west is west. But I assure you that as far as the maladies are concerned no racial differences are made.

Medical Colleges

At present there are only 3 colleges and 2 schools in the province. This number is not sufficient to cope with the demand for doctors. There is a scope for a few more institutions. I hope some philanthropic minded persons would come forward to fulfil this great need of the province.

As far as the admission to Medical Institutions is concerned 65% are rejected owing to lack of accommodation. There is no reservation of seats for the children of doctors. The continuation of one profession in the family is very desirable from all points of view. We do not maintain that the competition be abolished in the case of the children of medical men; what we do desire is that there should be a reservation of a few seats for them, and that these seats should be given to them in order of merit.

Teaching

The teaching in the medical colleges is in the hands of privileged class. But with the formation of the I.A.M.C. the residuary posts of the I.M.S. in the civil could have been abolished and all the Jail and Civil appointments held by them so far could have been thrown open to provincial medical service and the independent medical practitioners through selection. But the plea given against this principle by the Central Government was that the local bodies were opposed to the abolishing of such posts and the officers holding them were necessary to carry on the work in the various medical colleges and other institutions. In the words of All-India President, Dr. S. N. Kaul, this is rather strange for after more than half a century of Medical training in India by the British Government, it must be slur on their education system in the country if competent Indians cannot be found to fill these posts creditably.

Outside India the criterion of teaching is that the professors should be learned people and distinguished in research. In a country like Germany, as already explained by one of our presidents Dr. Mohd Nawaz, a professor can not remain in the position if he is not contributing important papers of research. The assistants have also the impetus of creating something new and important to climb up the ladder. In our country there are no such conditions for a professor. Assistants have also no impetus. Once an assistant he remains life long an assistant. They prepare their notes once which last till the end of teaching career.

Research

At the Patna Conference of the I.M.A. the association had started a research fund. I hope this fund would swell up very soon and things get going. Let us contribute towards this fund and see that the I.M.A. gives the lead to the Government.

Post-Graduate

In most of the professions a young graduate has to undergo a training of a year or so before he is allowed to practise but in our country no such injunction exists for medical graduates. In a country like Germany no doctor can practise so long as 12 months have not been spent as apprentice in various hospitals. Would it be crying for the moon if we could request the Government to enforce this in our country just for efficiency's sake.

Honoraries

I understand that the mofussil hospitals and even the leading institutions of Lahore are understaffed, and officers have very little time to attend to normal duties what to talk of extra work. If it is really so, would the government not give a chance to the independent medical profession to be attached to these hospitals in a honorary capacity. This would save money of the institution and also bring more efficiency of the work. If the choice be left to us we would give them quite efficient people who do the work at the cost of a great sacrifice and thus enhance the prestige of the association. The honoraries must get some privilege to work.

The modern medicine is more dependent upon the investigations. As a matter of fact a first class pathological laoratory should be attached to every institution. But the voluntary institutions can hardly afford their expenses, what to talk of the burden of an extra pathological department. Upto 1941 the specimens were examined at the Government Pathological institution at Lahore. But for the sake of petty financial gain this practice has been stopped. It is not consistent with the loss of the poor and naturally deserving patients who attend the private institutions. Not only that the stoppage of this pathological work deteriorates and lessens the knowledge of the workers in various departments. We wish that the Honourable Minister would would kindly grant these facilities not only to the suffering humanity in the non-government hospitals but also to the keen and zealous band of doctors who are devoting their life to the scientific work.

The mofussil hospitals are ill-equipped. What to talk of an X-ray apparatus, you hardly find a microscope. If the Government have no grant to sanction would they not approach the charitable minded phillanthropists and make the hospital upto-date. That would not only facilitate the working of the curative medicine but also help the teaching of students and post graduate training.

Children Clinics

The most neglected part of the society are the children. They are just left to nature. In case of their sickness the mothers first approach the pansaries and similar quacks for the advice. Mostly this even is not necessary. The old ladies themselves play the role of a doctor. The specialists of these diseases can be counted on the tips of the fingers. As far as the nurse are concerned there are hardly any. The hospitals for chlidren were unknown so far. Lately the great philanthropist Rao Bahadur Narain Dass has tried to fulfil the burning need of the public by opening a new hospital attached to Sir Ganga Ram group of hospitals. I take this opportunity of offering them our thanks and congratulations for being the pioneer in this direction. We wish this hospital a great success. He shall have our co-operation to the fullest. I hope it would be a great impetus for the younger colleagues to specialise in this important subject of medicine and thus look after the children on highly scientific lines.

Library

The Libraries that we have in the province are the King Edward Medical College Library and the Dyal Singh Library. The former is mostly meant for the teaching staff. The books once lent to them hardly see the face of the Library upto the end of the year. Would the staff not care to have their own books and let the new books be utilised by the other members of the profession.

Further these two Libraries are not enough to cope with the demand of the profession. Another uptodate Library should be opened and we should try to put it on a grand scale, and make it more useful.

Out Patients

The medical relief is to be given both to the poor and rich. But I must say it to my utter disgust that the profession caters for the affording class of people only. The poor hardly reach our premises. They keep on knocking the doors of quacks and pansaries and be satisfied. This is a deplorable condition. The out-patients of various hospitals are unfortunately flooded with the affording class of people. I wish that there would be almoner system in our country so that the poor who are afraid of us are kindly seated in the waiting halls of the out-patients and treated with care and affection. The affording class should make up their mind to go to practising doctors outside and get their treatment.

Nursing

No hospital can run without efficient Nursing. It was defective and inadequate even before the war and it has reached a limit these days. There is hardly any nurse available. The reason lies in (*a*) Most of the girls have joined the Auxiliary Forces and the few available prefer to do private nursing on exorbitant wages. Further nursing has not become a popular profession and Government have also not paid any attention to it. The drawbacks are that the educated girls usually join medical arts or training colleges and little attention is paid to the nursing schools. (*b*) The curriculum of nursing is in the English language and english speaking girls would not come forward whereas a large number of Hindi, Urdu and Gurmukhi knowing girls volunteer themselves for this art. I would suggest the Government to encourage this art more because it is even more important than the doctors. The Nurses registration council should adopt the Indian languages and a script in order to attract more girls to take up this art and more private hospitals be put on the training list. A better understanding between the nurse and the patient can only exist if they speak in the same language.

Training of Midwives

I have already said that the Dais should be replaced by midwives. But it is not a very easy job. Of course the examination of midwifery can be given in Hindi, Urdu and Gurmukhi. That part of the affair is of course very encouraging ut there are very few hospitals on the recognised list. The Midwifery Council has got a very strange conception of teaching. A doctor is fit enough to coach a final year medical student but he cannot give instructions to a midwife or teach her how to deliver a normal case. I find this attitude is a great slur on the obstetricians. I would request the I. G., C. H. and the other members of the council to go into this matter.

Factories

The factories are supervised and managed by the labourers whose health is looked after in a peculiar way. A doctor comes occasionally or when required and attends for an hour or so and is also paid a very meagre honorarium. Can he do any justice to his work? Is this the way of looking after the establishment and the sanitation of the factory? The Government Inspector of the Factories seem to overlook this state of affair. I would urge upon the management of the various factories to engage whole time medical officers and also have well-equipped dispensaries with one or two beds. This is least that could be done for the working folk.

System of Medicine

There are four systems of medicine existing in our country: Unani, Ayurveda, Allopathy and Homœopathy. It becomes very difficult for an average citizen to choose one of them for the eradication of the malady. Would it be expecting too much from the Government to give lead to the public in this direction. The Unani and Ayurvedic have their old traditions

and the allopathy is the off shoot of old greek medicine. It has been developed on certain scientific basis by the energetic workers and is in the hands of properly qualified people. The other three systems are mostly practised by quacks and charlatans and the qualified amongst them can be counted on the tips of the fingers. In order to have a uniform system of medicine in our country I would suggest the government to have a uniform standard of education for all the systems of medicine existing in our country. They should have the full course of medicine from Biology to Forensic medicine with extra lectures of different systems of medicine to be attended by those who so desire. In this way the pharmacologists shall have something to do in working out the useful drugs of the Ayurveda and Unani and thus enrich the Indian Pharmacopœia. Secondly, this would give better doctors for the suffering class of people and thus the quackery would be eradicated. There are certain colleges of non-allopathic system existing in our province which give very cheap diplomas to their students. These colleges should either be closed or brought to a recognisable standard.

Quackery

The quackery can further be eliminated if all the practitioners of the different systems of medicine be registered. There has been a move in this respect here but I don't know why the council has not started functioning in that direction. The Bombay Government has taken the lead and let us follow the example.

University Medical faculty

The curriculum for teaching is controlled by the University Medical Faculty. There is hardly a representative of the independent medical profession. The medical graduates of the Punjab University hardly know that they have the right to vote after 9 years of graduation on the payment of a small fee. Would I be asking too much if I appealed to all of them to get themselves registered with the University at once so that we have amongst us fellows of the Universitv and a representative on the medical faculty.

The Punjab Provincial Medical Service

On comparing the scale of pay for the Punjab Provincial Medical service with the Punjab Civil Service we find that the scale of pay for the former is lower. It is very strange that the people with specialised knowledge should not be paid adequately. How can the government expect good work from them? The government should pay them at least on the same basis and also give them extra technical allowance as it is in the army.

The New Drug Control Order

I find it deplorable that the government had to include the medical profession in the New Drug Control Order. The doctors are already governed by the rules and regulations of the Punjab Medical Faculty which is more or less a court for them. It was hardly necessary to open another court of law. But from what has been achieved in this direction to ameliorate the hardships of the profession during the last years through joint efforts of the Government and the Indian Medical Association, we are all glad that the conditions are better now than they were at the start of the year.

Prosecution of Doctors

Some of the doctors have lately been prosecuted under the Defence of India Rules. We are with the government if they have put the real culprits behind the bars, but the methods adopted for the evidence are to be condemned. Any innocent person can be hauled up. The Judges in England refused to entertain such cases. The relation between the doctor and the patient is that of honesty. If a patient complains that he had temperature the night before and had also severe headache and temperature being 98·3 at the time of examination, and if he desires a certificate to that effect, it has also to be issued. But it does not mean that a doctor should find himself in the court of law the next day with nice handcuffs on. By this occasion I may point out that our certificates are only a recommendation and no binding on anybody. We have to treat patients and also accede to their genuine requests irrespective of their motives. If for this fault of ours we have to be prosecuted, no proper medical aid can be rendered to the public.

Recognition of Association

It is deplorable to note that the Indian Medical Association has not found its place on the advisory board of medicine to the government. Would the Punjab not follow the other provinces like U.P. and recognise the Indian Medical Association?

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Resolutions passed at the 14th Session of the Punjab Provincial Medical Conference held at Sargodha on the 12th November, 1944

1. This conference places on record its grief on the death of Dr. Waryam Singh Tib—an enthusiastic member of the Rawalpindi Branch and offers its sincerest condolences to the bereaved family.

2. This conference places on record its grief on the death of Mr. Ram Narain, M.A., B.T., son-in-law of Dr. Ishar Das Bhatia of Amritsar, and offers its sincerest condolences to members of the bereaved family.

3. Resolved that the Punjab Government be requested to reserve the same number of seats in their medical institutions for the children of medical people, as was done previouslv in the King Edward Medical College Lahore, and further requests the trustees of non-official medical institutions to do the same.

4. This conference requests the medical graduates of the Punjab University with a standing of ten years or more, to register themselves as voters for the election of fellow of the Punjab University.

5. Resolved that i nview of the fact that acqisition of the M.B.B.S. degree takes a longer time than the M.A., or M.SC. degree holders of the M.B.B.S. degree should be entitled to vote for the election of fellows of the Punjab University, *without having to wait for ten years*, to acquire that right: it is further resolved that the Chancellor of the Punjab University be requested to put through the necessarv legislation through amending legislation through to give effect to this resolution.

6. Resolved that in view of great prevalence of Malaria in the Punjab and growing acute shortage of quinine in the market, the Punjab Government be requested to release adequate quantity of quinine to the *Registered Medical Practitioners*, at Control rates.

7. This conference views with alarm, the increasing abuse of in jections and other allopathic medicines resulting in serious mishaps and even in deaths by persons not holding registerable qualifications. The Punjab Government is requested to legislate against Quackery, and to enact such a law as to make this malpractice as a cognisable offence, and until such legislation is enacted, the government is requested to cancel (of Drugs Licences of all unqualified persons.

8. Resolved that the Journal of the Indian Medical Association, and other medical journals should not be debarred bv the jail authorities from reaching members of profession while in jails.

9. This conference views with alarm the manning of some of the government dispensaries by compounders alone.

10. Resolved that any member of the I.M.A. infringing the recommendations of the Indian Medical Association be debarred from holding any offices of the Association—Local, Provincial, or Central.

11. This conference views with alarm the prosicution of a large number of medical Men under the defence of India Rules for issuing alleged false certificates, and requests the government to issue instructions to the police not to employ Agents provocatuer—as a practice held undesirable in courts in England.

12. Resolved that this conference emphatically reiterates the resolution of the All-India Medical Conference and demands that there should be one uniform standard of medical qualification education, and that is M.B.B.S.

13. This conference offers its *heartfelt thanks*, to the Hon'ble Colonel Malik Khizar Hayat Khan Tiwana—the Premier of the Punjab for the keen interest evidenced by him in the holding of the conference at Sargodha, and his kindly placing his palatial building at the disposal of the Association.

NOTES AND NEWS

BIHAR PROVINCIAL MEDICAL CONFERENCE

The Vth Bihar Provincial Conference will be held at Muzaffarpur on the 28th, 29th and 30th October, 1945. Along with it will be held a Health and Medical Exhibition beginning from the 27th October, 1945.

INDIAN CHEMICAL MANUFACTURERS ASSOCIATION

The Government of India have agreed to give facilities to the Indian Chemical Manufacturers Association to send a delegation to the United Kingdom and the United States of America with a view to study the latest developments in the chemical industries in those countries. The delegation would consist of about ten representatives of most of the prominent chemical concerns all over the country who are in the membership of the Association. The delegation is expected to leave for the United Kingdom sometime in the beginning of August.

SIR THOMAS LEWIS

Sir Thomas Lewis, Physician to University College Hospital, and Director of the Department of Clinical Research and Holme Lecturer in the Medical School, died at Rickmansworth on March 17.

Sir Henry Dale, O.M., President of the Royal Society, sends the following appreciation:

With the death of Sir Thomas Lewis, at an age when his mental vigour had suffered no decline, we have lost an experimental scientist and physician of the highest rank. As is well-known Lewis very early made it his life's aim to establish in this country a strong and progressive tradition of direct experimental research on disease in the human subject, and to the furtherance of that aim he devoted the whole strength of his indomitable and uncompromising character, as well as his rare abilities.

The son of a distinguished mining engineer, a man of great influence in the South Wales coal industry, Lewis had an unusual education. But for a brief period at Clifton he was tutored at his parents' home, where, apart from formal learning, he acquired his abiding love of the country and trained his remarkable powers as an observer of Nature, which were to become so important a part of his equipment as physician and man of science. He decided to be a doctor before he entered his teens. The precocity of the decision was characteristic, as was, perhaps, the reason for it: two doctors who attended his family both happened to be conjurers, and young Tom supposed that a medical training would be necessary to enable him to rival their dexterity. Certainly a remarkable manual skill was to play its part, together with a persistent curiosity about natural phenomena and a rare alertness and accuracy of observation, in making the brilliant research worker which the boy was to become. Until he was 16 it does not seem to have occurred to the young Lewis that there was any need for him to work at his studies. They would, in any case, have come easily to him, and there were so many things in his country-life to attract and hold his interest more readily; but to suppose that in any moment of his waking life his brain was ever idle, relaxed, or inattentive is just impossible to anybody who knew him in after-life.

He reached a turning-point when at the age of 16 he sat for the London Matriculation Examination, and failed. That was, of course, enough for Lewis; he forthwith applied himself to his books, and thereafter he never failed in an examination. At Cardiff he worked hard and by the time he was 20 he was demonstrating for the professor of anatomy any physiology. Swale Vincent, professor of physiology, helped him to his first experience of research. In 1902, at the age of 21, with an entrance exhibition, he entered, University College Hospital, London, with which his connexion was to continue to the end of his life. All through his student career he was giving spare time to odds and ends of research, and meanwhile, in the informal friendliness of encounter at teashop luncheons, he was learning from seniors of the calibre of Horsley, Bayliss, and Starling, all quick to recognize the quality of this young man from Wales. He was lodging, too, at this time and making a life-long friendship with T. R. Elliot, by some years his senior. Lewis, indeed, had a precocious maturity of outlook and scientific judgment which made it natural for him to associate with older men: though he was my own junior by 6½ years, it never occurred to me to think of him as other than a contemporary in scientific development and experience. I remember the impression of assured scientific competence and judgment produced by his first serious piece of research, on sphygmograph records, when he described it to the Physiological Society. Lewis continued this work on pulse records in Starling's laboratory until he met James Mackenzie, whose stimulating influence turned his attention to the analysis, by the experimental methods then becoming available, of the ventricular irregularity which Mackenzie had called "nodal rhythm". Another influence at that time must have been the arrival at University College of Cushny, who had already produced auricular fibrillation experimentally. These contacts, together with Einthoven's introduction of the string galvanometer, set the stage for the research which was to establish Lewis's reputation as a medical investigator of achieved distinction and of tremendous promise.

Meanwhile he had been dividing his time between research, the tenure of appointments at minor hospitals, and occasional private consultations. His foot was, in fact, already well on a ladder leading to success as a consulting physician; but this was not the career on which he had set his heart. He had tasted the joys of research and had begun to be conscious of his life's mission, and to mistrust the possibility of dividing his time and attention between a concentrated investigation of one chosen problem and the finding of rapid solutions for a mixed succession presented from outside. In 1910 the first appointment of Beit Memorial Research Fellows gave Lewis a further chance; he was an applicant, and his name stands first on the now long and distinguished list of those who have been Beit Fellows. His tenure was brief, however, for in 1911 his old hospital gave him a lecturership, made him an assistant physician in 1912, and a consulting physician in 1913. He was now immersed in his great series of experimental researches on the mechanism of the heart beat, and this work was earning him recognition in the U.S.A. at least as soon as in his own country; for in 1914, still at the remarkably early age of 33, we find him delivering the Herter Lecturer at Baltimore, a Harvey Lecture in New York, and remaining for a spell as a visiting physician attached to the Peter Bent Brigham Hospital at Boston. His experimental work of this period, published in a masterly series of papers in the Philosophical Transactions of the Royal Society, and summarized in 1917 in his Croonian Lecture, must certainly rank as one of the outstanding achivements of physiology in our own or, indeed, in any time. For Lewis, however, it was merely the necessary background for a planned lifetime's study of the disturbances of the normal mechanism by disease.

In 1916 Lewis's career and opportunity were finally settled by his appointment as the first whole-time research physician on the staff of the Medical Research Council, with a ward and laboratories placed at his disposal by University College Hospital. Years later, in 1937, the support of his appointment there, as chief of a department of clinical research, was transferred to a special Trust endowed by the Rockefeller Foundation; but Lewis's research colleagues remained on the staff of the Medical Research Council. In its first few years the new department's activities were much scattered and interrupted by Lewis's service as consulting physician to military hospitals. But out of these war years came his well-known studies of the "Effort syndromes" ("soldier's heart") and the first stage, published with Cotton and Slade, of his second major series of researches, dealing with the reactions of the peripheral blood vessels, and eventually embodied in his remarkable monograph (1927), packed with original observations, on the Blood Vessels of the Human Skin and their Responses—a very model of what can be done by direct experiment on the human subject, with a minimum of apparantus, but with a naturalist's faculty of observation sharpened to the finest edge of precision. Here again Lewis's aim had been to get for himself an exact picture of normal reactions as a starting-point for his study of their modification by disease or by inborn abnormality.

Time and space alike forbid a detailed account here of the achievements in clinical research of Lewis and the school which he founded. As years went on the centre of his thoughts and his interest was more and more occupied by the importance of

(Continued at foot of col. 2, page 251)

REVIEWS

THE MEDICAL ANNUAL, Sixty-Second year, 1944; Edited by Sir Henry Tidy and A. Rendle Short. Demy. 8 vo. Pp. LXXVI+704+71, John Wright & Sons Ltd., Bristol.

We congratulate the publishers of the Medical Annual for continuing to cater modern knowledge in medicine, surgery, midwifery, public health and other cognate subjects even during this difficult time. One can now-a-days very rarely master all the knowledge in the different branches of medicine strewn over a wide field and this publication with its galaxy of contributors brings the year's progress within the compass of all practising physicians.

Infective jaundice has attracted much attention during the war and Col. William S. Middleton, Consulting Physician to the United States Army in the European Theatre of Operation, contributes an exhaustive article on the subject. New additions to British Pharmacopoeia show that synthetic drugs are invading the field more and more. Easton's syrup has lost its quinine content, alkaloidal content of ergot has been doubled from 0·1 to 0·2 per cent with a corresponding reduction in dose. For internal administration a lighter form of Kaolin has been introduced. Other interesting subjects in medicine are the routes of infection in poliomyelitis, immunisation results in diphtheria, effect of fluorosis on teeth, epidemic nausea and vomiting. Of tropical diseases, malaria, kala-azar, bacillary and amœbic dysenteries, and yellow fever naturally are given importance. The American Sub-committee on Tropical Diseases of the National Research Council, recommended the standard treatment of malaria as follows: quinine sulphate 10 gr., thrice daily after food for 2-3 days or till fever is controlled, ateorine 0·1 g. thrice daily after meals for the next five days. Two days without anti-malarial drug. Plasmoquinine 0·01 g. thrice daily after meals for five days. A note appears on intramuscular injection, pointing out that the vastus externus muscles and not the glutei, should be specially selected for injection. One sadly misses Penicillin under the heading of chemotherapy of bacterial invasion though scattered references are found throughout the book.

Surgeons will be more interested in surgery of the central nervous system, chest surgery and the amputations in infants. A method is suggested by which the further growth of the conical stump in the last instance can be prevented. In Obstetrics, importance of Rh factor is emphasised, and there is a special article on toxæmia of pregnancy. Mention of other special subjects dealt with in this book will fill many a page.

We do not believe that a practitioner can do without a copy.

N. G. MOJUMDAR.

FIVE YEAR PLAN OF POST WAR RECONSTRUCTION IN THE MEDICAL AND PUBLIC HEALTH DEPARTMENTS IN THE UNITED PROVINCES—

Towards the end of last year, the U. P. Government published their first draft of the five-year plan of post-war reconstruction and developments in the Medical and Public Health Departments of the province. These booklets contain valuable information and statistics.

Existing Medical Facilities—1. "For a population of 550 lakhs, the province has a total number of approx. 11,200 hospital beds. This works out to one bed per 5000 of the population. The corresponding figure for the United Kingdom is one bed per 200 of the population. In other words, the number of hospital beds in the U. P. with reference to population is 1/25 of what it is in the United Kingdom."

2. "This province spends a much smaller sum on medical relief than most of the other provinces. The following tables can prove the position of the several provinces in this respect.

Proportion of medical expenditure to total revenue expenditure (1943-44 budget.)—

1. Madras—5·1 p.c., 2. Orissa—4·7 p.c., 3. Assam—4·2 p.c., 4. Behar—4·1 p.c., 5. N. W. Frontier—4·1 p.c., 6. Bombay—3·8 p.c., 7. Punjab—3·0 p.c., 8. C. P. & Berar—3·7 p.c., 9. U.P.—2·2 p.c., 10. Bengal—2·1 p.c., 11. Sind—1·8 p.c.

Per Capita Medical Expenditure per annum of various provinces (1943-44).

1. Bombay—As. -|5|2, 2. N. W. Frontier—As. -|4|8, 3. Sind—As. -|3|9, 4. Madras—As. -|3|8, 5. Punjab—As. -|3|-, 6. Assam—As. -|2|5, 7. Orissa—As. -|1|11, 8. C.P. & Berar—As. -|1|8, 9. U.P.—As. -|1|6, 10. Bengal—As. -|1|5, 11. Bihar—As. -|1|2.

The figures in the latter table will be found particularly significant when we remember that the United Kingdom spends about Rs. 40/- per head per annum on health services as a whole."

3. "The total number of doctors in the United Provinces is about 4000 which gives one doctor per 14,000 of the population. The corresponding figure in the United Kingdom is roughly one doctor per 1000 of the population."

Schemes for Medical Dept—

The various schemes of post-war development have been classified under the following heads:—

1. Reconstruction, extension and improvement of existing hospitals.

2. New building projects.

3. Establishment of new institutions:

(I) Infirmaries—2 with 100 beds in each, one at Agra and the other at Lucknow.

(II) Convalescent homes—2 with 100 beds in each one at Agra and the other at Allahabad.

(III) Children's hospitals—2 at Agra and Lucknow.

(IV) Additional Mental hospital with 100 beds.

(V) Leper colonies—7 additional colonies to maintain 150 lepers in each colony.

(VI) Tuberculosis institutions—At present there are five tuberculosis Sanitoria and 13 T.B. Clinics in the province, besides the limited number of beds for T.B. patients in general hospitals and the T.B. Jail at Sultanpur. The total number of beds in the whole province for T.B. patients is about 680. The number of reported T.B. patients is 45,900. It is proposed to establish five more sanatoria on the lines of Bhowali Sanatorium with 150 beds each and to open T.B. Clinics in the remaining 55 districts in addition to adding a T.B. ward in each district hospital.

(VII) Radium Institute—to be attached to the Medical College at Agra.

(VIII) Clinics:—"It is proposed to establish in each district a venereal clinic, a dental clinic and an eye clinic *i.e.* a total of 144 clinics. These clinics will be in charge of honorary Medical Officers who will be paid a small monthly allowance."

(IX) Pathological Laboratories—Besides 8 laboratories recently established 40 additional pathological laboratories will be needed for the other district headquarters.

(X) Provincial Medical Stores Depot.

(XI) Medical Engineering Department.

4. *Expansion of Medical Education.*

(I) Establishment of an additional Medical College at Cawnpore or preferably at Allahabad.

(II) Establishment of a college of dentist at Agra or Lucknow.

(III) Opening of a central preliminary school for nurses. "Student nurses will receive a three months elementary training in nursing and social service."

(IV) Facilities for post-graduate study in foreign countries. "Selected medical officers holding permanent posts under the Government should be deputed every year for study in foreign countries. To begin with two man and one woman doctors should be deputed for study abroad."

5. *Development of medical facilities in rural areas.*

The total number of subsidised local boards, mission and other dispensaries in the rural areas is about 430. The following improvement have been suggested:—

(a) Establishment of new dispensaries @ 100 per year for 5 years *i.e.* 500 in 5 years. These will be mainly for out-patients and will have not more than 4 beds each.

(*b*) Increase in the number of subsidised practitioners—At present there are only 33 subsidised practitioners in the province. The number of these should be increased at the rate of 100 per year for 5 years *i.e.* an increase of 500.

(*c*) Establishment of medical benefit co-operative societies—The remuneration and costs of the village doctor are met partly by the society and partly by a subsidy of Rs. 600/- per annum from the Government.

(*d*) Strengthening of staff of existing branch dispensaries—Provision of nursing orderlies at male dispensaries and nurse-

midwives at town hospitals.

6. *Special Measures for extension of medical relief to women.*

At present there are about 50 branch dispensaries including Mission dispensaries etc. for women. It is proposed that all municipal towns, notified areas, town areas and towns with a population of 10,000 or over should have a separate women's hospital.

7. *Grants-in-aid.*

8. *Head-quarters and supervisory staff.*

(I) Appointment of 4 permanent D.I.G. of civil Hospitals —2 for head-quarter and 2 for eastern and western ranges.

(II) Additional staff for office of I.G.C.H.

(III) Inspectorate of accounts and stores.

Miscellaneous Schemes.

(I) Introduction of full dieting in headquarters hospitals.

(II) Extension of eye relief schemes.

(III) Provision of ambulances at headquarter's hospitals—two at divisional and one at district headquarters.

(IV) Appointment of whole time Superintendents at Mental hospitals at Bareilly and Benares.

Financial Aspects of the Plan:—

This plan envisages financial commitments of over of Rs. 520|- lakhs on-recurring and Rs. 66|- lakhs recurring. The Capital expenditure is to be met from the Hospitals Fund and the Revenue Reserve Fund. As regards the recurring cost, the report suggests increase in the rates of existing taxes and/or imposition of new levies as well as collection of departmental cesses and fees. The following are the possible sources of income for financing post-war measures of the Medical Dept.

(*a*) Payment for treatment.
(*b*) Public Philanthropy.
(*c*) Introduction of Almoners.
(*d*) Opening of turf clubs under Government auspices or otherwise with a view to appropriating income from horse racing for the use of hospitals, like Irish Sweepstakes, and

(*e*) Starting other similar institutions and ventures for raising funds.

"The budget of the Medical Department for 1944-45 amounts to Rs. 81·22 lakhs which gives a per capita expenditure of 2 annas 4 pies per annum for a population of 550 lakhs. Leaving capital expenditure out of account, the recurring expenditure on the schemes included in the present plan comes to Rs. 66·46 lakhs approximately. If all these schemes are introduced in the first five years after the war, the total recurring expenditure on the medical services would amount to Rs. 147·68 lakhs per annum, which would give a per capita expenditure of 4 annas 3 pies per annum. This would still be far below Rs. 40, which the United Kingdom spends per head of population on medical services as a whole in the pre-war period.

Five Year Post-War Plan of the Public Health Department.

As the plan is not comprehensive, the essential points are noted below:—

1. Provision of safe water-supply in villages.
2. Malaria control units—20 units for 48 districts.
3. Maternity and child welfare—provision of a few model organisations for urban and rural areas.
4. Water supply in small municipalities—Important towns with population of 50,000 and over should have protected water supply and such works should be subsidised by the Government.
5. Drainage schemes for towns.
6. Increase in number of travelling dispensaries.
7. Establishment of an Industrial Hygiene Section in the Provincial Public Health Department.
8. Establishment of a Nutrition Section in the Provincial Public Health Department.
9. Increase in the number of Sanitary Inspectors in rural areas—818; Inspectors one for each police circle *i.e.* 605 additional appointments required.
10. Provision of infectious disease hospitals.
11. Appointment of Medical Officers of Health in towns with income of Rs. 50,000 and above.
12. Extension of the school health service.
13. Appointment of women school health officers in six larger towns.
14. Subsidised scheme of a mid-day meal at all secondary schools.
15. Increase in the number of Asst. Medical Officers of health in the larger districts.
16. Appointment of additional medical officers of health for larger towns.
17. Appointment of two more Assistant Directors of Public Health (existing 4 A.D.P.H.)
18. Expansion of the Public Analyst's Department.
19. Establishment of (*a*) Tuberculosis Clinic and (*b*) Leprosy and Venereal diseases clinics at each district hospital.
20. Tuberculosis Sanatoria.

The schemes suggested, though sketchy and not comprehensive, will go a long way in ameliorating the sufferings of the people in U.P.

P. K. Guha.

(*Continued from page 249*)

his mission of his duty to the future of medicine, especially in his own country and of proclaiming its needs at every opportunity. The sword must not sleep in his hand till he had built here a temple for the service of medicine by the direct experimental investigation of disease in man, with proper careers and prospects open to its priesthood and its votaries. Some might urge, not without some justice I think, that the aspects of human disease open to investigation of this kind were its results —the symptoms which Lewis and his colleagues analysed into their physiological components with such beautiful precision—and that the whole range of ætiology, whether infective, nutritional, or genetic, must be almost entirely outside its scope. The main thing was that Lewis was creating an atmosphere in which medical research in the clinic was time incident in a career leading to consulting practice; that the young men rallied to his banner; that they learned his great language, caught his clear accent, and lived in the gleam of an eye—the eye of an eagle—which was always magnificent, indeed but mild only on occasions when the mission was momentarily out of his mind. They, and we all, have lost a great leader; but his spirit goes marching on.

Till 1927, when serious illness struck him where he most clearly knew its meaning, Lewis had worked for ten months of every year with a concentrated energy which left his junior colleagues panting with the effort to keep pace with him. In the other two months, taken always as a continuous vacation, he put medicine completely out of his mind but gave himself with a like enthusiasm, and with all that training and perfection of equipment could provide, to watching and photographing the birds which he so loved. After his first illness he put this joy, with its temptations to physical strain, out of his thoughts; he moved into the country, gave himself more regular leisure to enjoy his garden, and chose the quieter distraction of fishing for his holiday. He knew what was before him. "Another arrow from the same quiver, my friend," he said to me when a second, less severe attack came in 1935; "but there are plenty more to come, and one of them will get me in the end". Meanwhile, with a magnificent courage, he succeeded in what, for him, must have been the most difficult of all achievements—schooling himself to work at a reasonable pace. To this he was helped beyond measure by the serene happiness of his marriage and his family life, in which the affection which was at the real, warm heart of him overflowed in joy and pride. To his widow, his son, and his two daughters, and those of us who knew him as one of the most loyal and generous, if not always the easiest, of friends, there must remain, in the midst of sorrow, the thought that he has gone before age could weaken the spring and eagerness of his wonderful mind and spirit.

In his approach to medical research, as in the quality of his genius, I believe that Thomas Lewis was the nearest successor which our generation will see to his own great pattern and exemplar, William Harvey.—*Brit. M. J.*

CORRESPONDENCE

The Editor is not responsible for any views expressed by contributors.—EDITOR.

HIGH BLOOD PRESSURE

SIR,—High blood pressure occurs very often among our people and we are very much interested in finding out about the frequency of its occurrence among the different nations and races of the earth. We are also interested in the effects of climate, food, altitude, and any other factor that may apparently play a part.

Due to your situation, you could help us a very great deal in this matter by telling us about this and any other unusual conditions along this line that you may find in your contact with various people.—I am, etc.

Jafferson Hospital,
Raonoke, V.A., U.S.A. GEORGE B. LAWSON, M.D.
23-2-45.

POST-GRADUATE MEDICAL DEGREES

SIR,—While the Indian medical profession is very grateful to Col. McRobert for the article on Indian degrees for Indian graduates (*Indian M. Gaz.*, April, 1944, Pp. 174-7) there are a few problems which require further elucidation.

Lt. Col. B. K. Sheorey has drawn attention to a defect in Indian situation (*Indian M. Gaz.*, Sept., 1944, p. 452). "It is mistaken notion and unfortunately quite a large number of people labour under the impression that specialisation in general or in the divisions of medicine or surgery in particular, can be obtained merely by passing higher examinations or obtaining appropriate diplomas. But this is not the case. Specialisation comes only after long practice and after working under or watching the work of specialists in those subjects or sub-divisions. I am afraid that in this respect India is very poor. People desirous of specialising in such branches will have to visit clinics abroad to obtain the necessary experience. As long as merely passing examinations and obtaining foreign qualifications are considered the criteria of one's knowledge or skill, no progress can be made".

The report of the G.M.C. Special committee for the registration of specialists (a summary of which is published in *Lancet*, August 5, 1944, p. 187) may be helpful in this respect. Commenting editorially on the report, the *Lancet* adds "The choice of candidates for training as specialists can be left to the teachers in the medical schools and hospitals. Quality and promise should be the only criteria. Training will be effected through a succession of approved and adequately paid appointments sch as Senior house appointments, laboratory assistantships and registrarship". Those who have to choose the specialists, are advised to select "not merely a man who will do the work for them but a man worthy of the training they will give him". In the training of the specialists, the foundation should be a sound general clinical experience plus a period of work in one or more of the laboratory subjects. They must have time to study and also get personal direction under competent teachers. Specialist will take 4 or 5 years to train.

Examinations and Degrees—Commenting on the statement in the report that a specialist should have a higher qualification from the Royal Colleges or Universities, *Lancet* discussed the subject of post-graduate examinations. "The purpose of an examination is three-fold, to stimulate the student to influence the scope and nature of his study and to test the adequacy of his knowledge and experience. Since the material and outlook of a single teaching school in respect of any speciality is relatively limited, it is better that such examinations be conducted by a national body rather than by individual schools. The examination could naturally be subject to inspection by G.M.C. The examination should test nothing more than the competence and experience deciding whether the student is equipped to practise his speciality.

Finally referring to the higher degrees, it adds "It is well known that the present requirements for M.Ds. vary so widely as to make their significance highly uncertain. If they were reserved for those candidates who show academic qualities of mind and capacity for original investigatin of a high order, they would serve a more useful purpose than they do today: the requirements would be a good thesis and an adequate performance in an oral examination on the field in which its subject lies and a clinical examination could be dispensed with."

May we hope that the universities, the medical faculties and the medical Pandits, will not entirely overlook or disregard the point of view of the junior members of the profession and the potential candidates, who would like to have in India also the same facilities and uniform standards and outlook as in Britain on post-graduate medical degrees, in medicine, or in surgery, or in the various clinical specialities as well as in the non-clinical subjects. I am, etc.

Medical Educationist.

PRESERVATION OF PLASMA

SIR,—Recent developments in the processing and preservation of plasma have rendered the employment of an antiseptic preservative unnecessary. Nevertheless, in small laboratories with restricted facilities, the preservation of plasma remains still a difficult problem. The addition of antiseptic is not advisable and a fair proportion of specimens gets contaminated. During the last three months we have been employing penicillin for the preservation of plasma. It is added during bottling in a concentration of one unit per c.c. This has resulted in reducing the frequency of contamination. Being an antibiotic itself, penicillin may not interfere with the quality of plasma and it may also be of some value in some cases in combating infection, though the ultimate concentration after administration is very low. I am, etc.

Vizagapatam, N. G. PANDALAI.

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